BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents *will not* correct images, please do not report the images to the Image Problem Mailbox.

FILE 'SCISEARCH' ENTERED AT 13:59:35 ON 14 AUG 2001
COPYRIGHT (C) 2001 Institute for Scientific Information (ISI) (R)

FILE 'BIOSIS' ENTERED AT 13:59:35 ON 14 AUG 2001
COPYRIGHT (C) 2001 BIOSIS(R)

FILE 'REGISTRY' ENTERED AT 13:59:35 ON 14 AUG 2001
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2001 American Chemical Society (ACS)

=> s psoralen?
L1 15961 PSORALEN?

=> s l2 and mutagen?
L2 NOT FOUND
The L-number entered could not be found. To see the definition
of L-numbers, enter DISPLAY HISTORY at an arrow prompt (=>).

=> s l1 and mutagen?
L2 1137 L1 AND MUTAGEN?

=> s l2 and py<1998
2 FILES SEARCHED...
4 FILES SEARCHED...
5 FILES SEARCHED...
'1998' NOT A VALID FIELD CODE
L3 960 L2 AND PY<1998

=> s l3 and vertebrate
L4 42 L3 AND VERTEBRATE

=> dup rem l4
DUPLICATE IS NOT AVAILABLE IN 'REGISTRY'.
ANSWERS FROM THESE FILES WILL BE CONSIDERED UNIQUE
PROCESSING COMPLETED FOR L4
L5 42 DUP REM L4 (0 DUPLICATES REMOVED)

=> d ibib ti 1-
YOU HAVE REQUESTED DATA FROM 42 ANSWERS - CONTINUE? Y/(N):y

L5 ANSWER 1 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1997:519395 BIOSIS
DOCUMENT NUMBER: PREV199799818598
TITLE: Processing of targeted **psoralen** cross-links in Xenopus oocytes.
AUTHOR(S): Segal, David J.; Faruqi, A. Fawad; Glazer, Peter M.; Carroll, Dana (1)
CORPORATE SOURCE: (1) Dep. Biochemistry, Univ. Utah Sch. Med., Salt Lake City, UT 84132 USA
SOURCE: Molecular and Cellular Biology, (1997) Vol. 17, No. 11, pp. 6645-6652.
ISSN: 0270-7306.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Processing of targeted **psoralen** cross-links in Xenopus oocytes.

L5 ANSWER 2 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS

search results for 1st O.A.

09/786,309

filing date 3/12/99

Trying 3106016892...Open

Welcome to STN International! Enter x:x
LOGINID:SSSPTA1635LAN
PASSWORD:
TERMINAL (ENTER 1, 2, 3, OR ?):2

* * * * * * * * * * Welcome to STN International * * * * * * * * * *

NEWS	1		Web Page URLs for STN Seminar Schedule - N. America
NEWS	2	Dec 17	The CA Lexicon available in the CAPLUS and CA files
NEWS	3	Feb 06	Engineering Information Encompass files have new names
NEWS	4	Feb 16	TOXLINE no longer being updated
NEWS	5	Apr 23	Search Derwent WPINDEX by chemical structure
NEWS	6	Apr 23	PRE-1967 REFERENCES NOW SEARCHABLE IN CAPLUS AND CA
NEWS	7	May 07	DGENE Reload
NEWS	8	Jun 20	Published patent applications (A1) are now in USPATFULL
NEWS	9	JUL 13	New SDI alert frequency now available in Derwent's DWPI and DPCI

NEWS EXPRESS	July 11 CURRENT WINDOWS VERSION IS V6.0b, CURRENT MACINTOSH VERSION IS V5.0C (ENG) AND V5.0JB (JP), AND CURRENT DISCOVER FILE IS DATED 06 APRIL 2001
NEWS HOURS	STN Operating Hours Plus Help Desk Availability
NEWS INTER	General Internet Information
NEWS LOGIN	Welcome Banner and News Items
NEWS PHONE	Direct Dial and Telecommunication Network Access to STN
NEWS WWW	CAS World Wide Web Site (general information)

Enter NEWS followed by the item number or name to see news on that specific topic.

All use of STN is subject to the provisions of the STN Customer agreement. Please note that this agreement limits use to scientific research. Use for software development or design or implementation of commercial gateways or other similar uses is prohibited and may result in loss of user privileges and other penalties.

* * * * * * * * * * * * * STN Columbus * * * * * * * * * * * * * * * *

FILE 'HOME' ENTERED AT 13:59:16 ON 14 AUG 2001

=> file medline embase caplus scisearch biosis reg

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	0.15	0.15

FILE 'MEDLINE' ENTERED AT 13:59:35 ON 14 AUG 2001

FILE 'EMBASE' ENTERED AT 13:59:35 ON 14 AUG 2001

FILE 'CAPLUS' ENTERED AT 13:59:35 ON 14 AUG 2001
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

ACCESSION NUMBER: 1997:214169 BIOSIS
DOCUMENT NUMBER: PREV199799520673
TITLE: Malignant melanoma in patients treated for psoriasis with methoxsalen (**psoralen**) and ultraviolet A radiation (PUVA.
AUTHOR(S): Stern, Robert S. (1); Nichols, Khanh T.; Vakeva, Liisa H.
CORPORATE SOURCE: (1) 330 Brookline Ave., Boston, MA 02215 USA
SOURCE: New England Journal of Medicine, (1997) Vol. 336, No. 15, pp. 1041-1045.
ISSN: 0028-4793. claims 1 & 5
DOCUMENT TYPE: Article
LANGUAGE: English
TI Malignant melanoma in patients treated for psoriasis with methoxsalen (**psoralen**) and ultraviolet A radiation (PUVA.

L5 ANSWER 3 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1997:126663 BIOSIS
DOCUMENT NUMBER: PREV199799418476
TITLE: Potassium-resistant triple helix formation and improved intracellular gene targeting by oligodeoxyribonucleotides containing 7-deazaxanthine.
AUTHOR(S): Faruqi, A. Fawad; Krawczyk, Stephen H.; Matteucci, Mark D.;
Glazer, Peter M. (1)
CORPORATE SOURCE: (1) Dep. Therapeutic Radiol., Yale Univ. Sch. Med., P.O. Box 208040, New Haven, CT 06520-8040 USA
SOURCE: Nucleic Acids Research, (1997) Vol. 25, No. 3, pp. 633-640.
ISSN: 0305-1048.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Potassium-resistant triple helix formation and improved intracellular gene
targeting by oligodeoxyribonucleotides containing 7-deazaxanthine.

L5 ANSWER 4 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1997:456456 BIOSIS
DOCUMENT NUMBER: PREV199799755659
TITLE: Photogenotoxicity of skin phototumorigenic fluoroquinolone antibiotics detected using the comet assay.
AUTHOR(S): Reavy, Helen J.; Traynor, Nicola J.; Gibbs, Neil K. (1)
CORPORATE SOURCE: (1) Photobiol. Unit, Ninewells Hosp., Dundee DD1 9SY UK
SOURCE: Photochemistry and Photobiology, (1997) Vol. 66, No. 3, pp.
368-373.
ISSN: 0031-8655.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Photogenotoxicity of skin phototumorigenic fluoroquinolone antibiotics detected using the comet assay.

L5 ANSWER 5 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1997:394418 BIOSIS
DOCUMENT NUMBER: PREV199799693621
TITLE: P53 mutation in squamous cell carcinomas from psoriasis patients treated with **psoralen** plus UVA (PUVA.
AUTHOR(S): Nataraj, Arun J.; Wolf, Peter; Cerroni, Lorenzo; Ananthaswamy, Honnavara N. (1)
CORPORATE SOURCE: (1) Dep. Immunol., Univ. Texas M. D. Anderson Cancer Cent.,

1515 Holcombe Blvd., Box 178, Houston, TX 77030 USA
SOURCE: Journal of Investigative Dermatology, (1997) Vol. 109, No. 2, pp. 238-243.
ISSN: 0022-202X.
DOCUMENT TYPE: Article
LANGUAGE: English
TI P53 mutation in squamous cell carcinomas from psoriasis patients treated with **psoralen** plus UVA (PUVA.

claim 6 & 7

L5 ANSWER 6 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1997:303826 BIOSIS
DOCUMENT NUMBER: PREV199799603029
TITLE: Mammalian toxicity of 5-methoxypsoralen and 8-methoxypsoralen, two compounds used in skin photochemotherapy.
AUTHOR(S): Diawara, M. M. (1); Kulkosky, P.; Williams, D. E.; McCrory, S.; Allison, T. G.; Martinez, L. A.
CORPORATE SOURCE: (1) Dep. Biol., Univ. Southern Colorado, Pueblo, CO 81001 USA
SOURCE: Journal of Natural Toxins, (1997) Vol. 6, No. 2, pp. 183-192.
ISSN: 1058-8108.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Mammalian toxicity of 5-methoxypsoralen and 8-methoxypsoralen, two compounds used in skin photochemotherapy.

L5 ANSWER 7 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1997:399787 BIOSIS
DOCUMENT NUMBER: PREV199799698990
TITLE: Photochemical and photobiological studies of a furonaphthopyranone as a benzo-spaced **psoralen** analog in cell-free and cellular DNA.
AUTHOR(S): Adam, Waldemar (1); Mielke, Karsten; Saha-Moeller, Chantu R.; Moeller, Marianne; Stopper, Helga; Hutterer, Rudolf; Schneider, Friedemann W.; Ballmaier, Daniel; Epe, Bernd; Gasparro, Francis F.; Chen, Xinsheng; Kagan, Jacques
CORPORATE SOURCE: (1) Inst. Org. Chem., Univ. Wuerzburg, Am Hubland, D-97074 Wuerzburg Germany
SOURCE: Photochemistry and Photobiology, (1997) Vol. 66, No. 1, pp. 46-54.
ISSN: 0031-8655.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Photochemical and photobiological studies of a furonaphthopyranone as a benzo-spaced **psoralen** analog in cell-free and cellular DNA.

L5 ANSWER 8 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1997:517235 BIOSIS
DOCUMENT NUMBER: PREV199799816438
TITLE: Acute myeloid leukemia following **psoralen** with ultraviolet a therapy: A fluorescence in situ hybridization study.
AUTHOR(S): Kwong, Y. L. (1); Au, W. Y.; Ng, M. H. L.; Chan, L. C.; Au, T. S.
CORPORATE SOURCE: (1) Univ. Dep. Med., Professorial Block, Queen Mary Hosp.,

Pokfulam Rd., Hong Kong Hong Kong
SOURCE: Cancer Genetics and Cytogenetics, (1997) Vol. 99, No. 1, pp. 11-13.
ISSN: 0165-4608.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Acute myeloid leukemia following **psoralen** with ultraviolet a therapy: A fluorescence in situ hybridization study.

L5 ANSWER 9 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1997:276827 BIOSIS
DOCUMENT NUMBER: PREV199799576030
TITLE: Gene targeting using triple-helix-forming oligonucleotides.
AUTHOR(S): Faruqi, A. F.; Wang, G.; Raha, M.; Chan, P.; Seidman, M. M.; Glazer, P. M. (1)
CORPORATE SOURCE: (1) Dep. Therapeutic Radiol., Yale Univ. Sch. Med., P.O. Box 208040, 333 Cedar St., New Haven, CT 06520-8040 USA
SOURCE: Felgner, P. L. [Editor]; Heller, M. J. [Editor]; Lehn, P. [Editor]; Behr, J. P. [Editor]; Szoka, F. C., Jr. [Editor].
(1996) pp. 47-55. ACS Conference Proceedings Series; Artificial self-assembling systems for gene delivery. Publisher: American Chemical Society Marketing Division, Room 205, 1155 16th St. N.W., Washington, DC 20036, USA. Meeting Info.: Two Conferences by the Cambridge Healthteck Institute Wakefield, Massachusetts, USA September 28-29, 1995
ISBN: 0-8412-3415-9.
DOCUMENT TYPE: Book; Conference
LANGUAGE: English
TI Gene targeting using triple-helix-forming oligonucleotides.

L5 ANSWER 10 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1996:219761 BIOSIS
DOCUMENT NUMBER: PREV199698775890
TITLE: **Mutagenesis** by third-strand-directed **psoralen** adducts in repair-deficient human cells: High frequency and altered spectrum in a xeroderma pigmentosum variant.
AUTHOR(S): Raha, Manidipa; Wang, Gan; Seidman, Michael M.; Glazer, Peter M. (1)
CORPORATE SOURCE: (1) Dep. Therapeutic Radiol., Yale Univ. Sch. Med., PO Box 208040, New Haven, CT 06520-8040 USA
SOURCE: Proceedings of the National Academy of Sciences of the United States of America, (1996) Vol. 93, No. 7, pp. 2941-2946.
ISSN: 0027-8424.
DOCUMENT TYPE: Article
LANGUAGE: English
TI **Mutagenesis** by third-strand-directed **psoralen** adducts in repair-deficient human cells: High frequency and altered spectrum in a xeroderma pigmentosum variant.

L5 ANSWER 11 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1996:283280 BIOSIS
DOCUMENT NUMBER: PREV199699005636
TITLE: Strand specificity of **mutagenic** bypass replication of DNA containing **psoralen** monoadducts in a human cell extract.

AUTHOR(S): Thomas, David C.; Svoboda, Daniel L.; Vos, Jean-Michel H. (1); Kunkel, Thomas A.
CORPORATE SOURCE: (1) UNC Lineberger Comprehensive Cancer Cent., Sch. Med., Univ. North Carolina, Chapel Hill, NC 27599-7295 USA
SOURCE: Molecular and Cellular Biology, (1996) Vol. 16, No. 5, pp. 2537-2544.
ISSN: 0270-7306.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Strand specificity of **mutagenic** bypass replication of DNA containing **psoralen** monoadducts in a human cell extract.

L5 ANSWER 12 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1996:192982 BIOSIS
DOCUMENT NUMBER: PREV199698749111
TITLE: Angular furoquinolinones, **psoralen** analogs: Novel antiproliferative agents for skin diseases: Synthesis, biological activity, mechanism of action, and computer-aided studies.
AUTHOR(S): Rodighiero, Paolo; Guiotto, Adriano (1); Chilin, Adriana; Bordin, Franco; Baccichetti, Francarosa; Carlassare, Francesco; Vedaldi, Daniela; Caffieri, Sergio; Pozzan, A.; Dall'acqua, Francesco
CORPORATE SOURCE: (1) Dep. Pharmaceutical Sci., Via Fr. Marzolo 5, I-35131 Padova Italy
SOURCE: Journal of Medicinal Chemistry, (1996) Vol. 39, No. 6, pp. 1293-1302.
ISSN: 0022-2623.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Angular furoquinolinones, **psoralen** analogs: Novel antiproliferative agents for skin diseases: Synthesis, biological activity, mechanism of action, and computer-aided studies.

L5 ANSWER 13 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1996:128883 BIOSIS
DOCUMENT NUMBER: PREV199698701018
TITLE: Triplex-mediated, in vitro targeting of **psoralen** photoadducts within the genome of a transgenic mouse.
AUTHOR(S): Gunther, Edward J.; Havre, Pamela A.; Gasparro, Francis P.;
Glazer, Peter M. (1)
CORPORATE SOURCE: (1) Dep. Ther. Radiol., Yale Univ. Sch. Med., P.O. Box 208040, 333 Cedar St., New Haven, CT 06520-8040 USA
SOURCE: Photochemistry and Photobiology, (1996) Vol. 63, No. 2, pp.
207-212.
ISSN: 0031-8655.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Triplex-mediated, in vitro targeting of **psoralen** photoadducts within the genome of a transgenic mouse.

L5 ANSWER 14 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1996:447094 BIOSIS
DOCUMENT NUMBER: PREV199699169450
TITLE: The **mutagenic** processing of **psoralen** photolesions leaves a highly specific signature at an endogenous human locus.
AUTHOR(S): Laguerbe, A.; Guillouf, C.; Moustacchi, E.; Papadopoulo, D.

CORPORATE SOURCE: URA 1292, CNRS, Inst. Curie-Biologie, Paris France
SOURCE: Mutation Research, (1996) Vol. 360, No. 3, pp. 205.
Meeting Info.: 25th Annual Meeting of the European Environmental Mutagen Society Noordwijkerhout, Netherlands June 18-23, 1995
ISSN: 0027-5107.
DOCUMENT TYPE: Conference
LANGUAGE: English
TI The **mutagenic** processing of **psoralen** photolesions leaves a highly specific signature at an endogenous human locus.

L5 ANSWER 15 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1995:510766 BIOSIS
DOCUMENT NUMBER: PREV199598515816
TITLE: Altered repair of targeted **psoralen** photoadducts in the context of an oligonucleotide-mediated triple helix.
AUTHOR(S): Wang, Gan; Glazer, Peter M. (1)
CORPORATE SOURCE: (1) Dep. Therapeutic Radiol., Yale Univ. Sch. Med., New Haven, CT 06520-8040 USA
SOURCE: Journal of Biological Chemistry, (1995) Vol. 270, No. 38, pp. 22595-22601.
ISSN: 0021-9258.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Altered repair of targeted **psoralen** photoadducts in the context of an oligonucleotide-mediated triple helix.

L5 ANSWER 16 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1995:171471 BIOSIS
DOCUMENT NUMBER: PREV199598185771
TITLE: Targeted **mutagenesis** in mammalian cells mediated by intracellular triple helix formation.
AUTHOR(S): Wang, Gan; Levy, Dan D.; Seidman, Michael M.; Glazer, Peter M. (1)
CORPORATE SOURCE: (1) Dep. Therapeutic Radiol, Yale Univ. Sch. Medicine, 333 Cedar St., New Haven, CT 06510 USA
SOURCE: Molecular and Cellular Biology, (1995) Vol. 15, No. 3, pp. 1759-1768.
ISSN: 0270-7306.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Targeted **mutagenesis** in mammalian cells mediated by intracellular triple helix formation.

L5 ANSWER 17 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1995:364681 BIOSIS
DOCUMENT NUMBER: PREV199598378981
TITLE: **Mutagenicity** and specific mutation spectrum induced by 8-methoxypsoralen plus a low dose of UVA in the hprt gene in diploid human fibroblasts.
AUTHOR(S): Chiou, Chiuan-Chian; Yang, Jia-Ling
CORPORATE SOURCE: Inst. Biomedical Sciences, National Tsing Hua Univ., Hsinchu 300 Taiwan
SOURCE: Carcinogenesis (Oxford), (1995) Vol. 16, No. 6, pp. 1357-1362.
ISSN: 0143-3334.
DOCUMENT TYPE: Article
LANGUAGE: English

TI **Mutagenicity** and specific mutation spectrum induced by 8-methoxypsoralen plus a low dose of UVA in the hprt gene in diploid human fibroblasts.

L5 ANSWER 18 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1995:208636 BIOSIS
DOCUMENT NUMBER: PREV199598222936
TITLE: **Mutagenesis** by 8-methoxypsoralen and 5-methylangelicin photoadducts in mouse fibroblasts: Mutations at cross-linkable sites induced by monoadducts as well as cross-links.
AUTHOR(S): Gunther, Edward J.; Yeasky, Toni M.; Gasparro, Francis P.; Glazer, Peter M. (1)
CORPORATE SOURCE: (1) Dep. Therapeutic Radiol., Yale Univ. Sch. Med., P.O. Box 208040, New Haven, CT 06520-8040 USA
SOURCE: Cancer Research, (1995) Vol. 55, No. 6, pp. 1283-1288. ISSN: 0008-5472.
DOCUMENT TYPE: Article
LANGUAGE: English
TI **Mutagenesis** by 8-methoxypsoralen and 5-methylangelicin photoadducts in mouse fibroblasts: Mutations at cross-linkable sites induced by monoadducts as well as cross-links.

L5 ANSWER 19 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1995:528383 BIOSIS
DOCUMENT NUMBER: PREV199598542683
TITLE: Elimination of potential **mutagenicity** in platelet concentrates that are virally inactivated with **psoralens** and ultraviolet A light.
AUTHOR(S): Margolis-Nunno, H. (1); Robinson, R.; Ben-Hur, E.; Chin, S.; Orme, T.; Horowitz, B.
CORPORATE SOURCE: (1) Lindsley F. Kimball Res. Inst., N.Y. Blood Cent., 310 E. 67th St., New York, NY 10021 USA
SOURCE: Transfusion (Bethesda), (1995) Vol. 35, No. 10, pp. 855-862. ISSN: 0041-1132.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Elimination of potential **mutagenicity** in platelet concentrates that are virally inactivated with **psoralens** and ultraviolet A light.

L5 ANSWER 20 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1995:279525 BIOSIS
DOCUMENT NUMBER: PREV199598293825
TITLE: Targeted **mutagenesis** in mammalian cells mediated by intracellular triple helix formation: A new approach to gene therapy.
AUTHOR(S): Wang, Gan (1); Levy, Dan D.; Seidman, Michael M.; Glazer, Peter M. (1)
CORPORATE SOURCE: (1) Dep. Ther. Radiol., Yale Univ. Sch. Med., 333 Cedar St., New Haven, CT 06510 USA
SOURCE: Journal of Cellular Biochemistry Supplement, (1995) Vol. 0, No. 21A, pp. 386.
Meeting Info.: Keystone Symposium on Gene Therapy and Molecular Medicine Steamboat Springs, Colorado, USA March 26-April 1, 1995

ISSN: 0733-1959.
DOCUMENT TYPE: Conference
LANGUAGE: English
TI Targeted **mutagenesis** in mammalian cells mediated by intracellular triple helix formation: A new approach to gene therapy.

L5 ANSWER 21 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1995:510998 BIOSIS
DOCUMENT NUMBER: PREV199598516048
TITLE: Triple helix directed **psoralen** adducts induce a low frequency of recombination in an SV40 shuttle vector.
AUTHOR(S): Sandor, Zoltan (1); Bredberg, Anders
CORPORATE SOURCE: (1) Dep. Med. Microbiol., Univ. Lund, General Hosp., S-214 01 Malmo Sweden
SOURCE: Biochimica et Biophysica Acta, (1995) Vol. 1263, No. 3, pp.
235-240.
ISSN: 0006-3002.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Triple helix directed **psoralen** adducts induce a low frequency of recombination in an SV40 shuttle vector.

L5 ANSWER 22 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1995:266712 BIOSIS
DOCUMENT NUMBER: PREV199598281012
TITLE: Genotoxic potential of **psoralen** cross-links versus monoadducts in normal human lymphoblasts.
AUTHOR(S): Laquerbe, A. (1); Moustacchi, E.; Papadopoulo, D.
CORPORATE SOURCE: (1) Inst. Curie-Biologie, URA 1292 CNRS, 26 rue d'Ulm, 75231 Paris, Cedex 05 France
SOURCE: Mutation Research, (1995) Vol. 346, No. 3, pp. 173-179.
ISSN: 0027-5107.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Genotoxic potential of **psoralen** cross-links versus monoadducts in normal human lymphoblasts.

L5 ANSWER 23 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1995:331601 BIOSIS
DOCUMENT NUMBER: PREV199598345901
TITLE: **Mutagenesis** in mammalian cells by 8-methoxypsoralen, 5-methylangelicin, and **psoralen** -conjugated triplex-forming oligonucleotides.
AUTHOR(S): Glazer, P. M. (1); Gasparro, F. P.; Wang, G.; Gunther, E. J.
CORPORATE SOURCE: (1) Dep. Therapeutic Radiol., Yale Sch. Med., P.O. Box 208040, New Haven, CT 06520 USA
SOURCE: Photochemistry and Photobiology, (1995) Vol. 61, No. 5 SUPPL., pp. 84S.
Meeting Info.: 23rd Annual Meeting of the American Society for Photobiology Washington, D.C., USA June 17-22, 1995
ISSN: 0031-8655.
DOCUMENT TYPE: Conference
LANGUAGE: English
TI **Mutagenesis** in mammalian cells by 8-methoxypsoralen, 5-methylangelicin, and **psoralen**-conjugated triplex-forming oligonucleotides.

L5 ANSWER 24 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS

ACCESSION NUMBER: 1996:21338 BIOSIS
DOCUMENT NUMBER: PREV199698593473
TITLE: The **mutagenic** progressing of **psoralen** photolesions leaves a highly specific signature at an endogenous human locus.
AUTHOR(S): Laquerbe, Agnes; Guillouf, Christel; Moustacchi, Ethel; Papadopoulo, Dora (1)
CORPORATE SOURCE: (1) URA 1292 du CNRS, Inst. Curie Section Recherche, 26 rue d'Ulm, 75231 Paris, Cedex 05 France
SOURCE: Journal of Molecular Biology, (1995) Vol. 254, No. 1, pp. 38-49.
ISSN: 0022-2836.
DOCUMENT TYPE: Article
LANGUAGE: English
TI The **mutagenic** progressing of **psoralen** photolesions leaves a highly specific signature at an endogenous human locus.

L5 ANSWER 25 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1994:390592 BIOSIS
DOCUMENT NUMBER: PREV199497403592
TITLE: Repair of triple helix directed **psoralen** adducts in human cells.
AUTHOR(S): Sandor, Zoltan (1); Bredberg, Anders
CORPORATE SOURCE: (1) Dep. Med. Microbiol., Lund Univ., General Hosp., S-214 01 Malmo Sweden
SOURCE: Nucleic Acids Research, (1994) Vol. 22, No. 11, pp. 2051-2056.
ISSN: 0305-1048.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Repair of triple helix directed **psoralen** adducts in human cells.

L5 ANSWER 26 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1995:34453 BIOSIS
DOCUMENT NUMBER: PREV199598048753
TITLE: DNA damage and topoisomerase II inhibition induced by a benzopsoralen derivative.
AUTHOR(S): Pani, B.; Barbisin, M.; Russo, E. (1); Tamaro, M.; Baccichetti, F.; Carlassare, F.; Marzano, C.; Rodighiero, P.; Bordin, F.
CORPORATE SOURCE: (1) Dip. de Biochim., Biosfisica e Chimica delle Macromol., Univ. di Trieste, Via Giorgieri 1, I-34127 Trieste Italy
SOURCE: Mutation Research, (1994) Vol. 311, No. 2, pp. 277-285.
ISSN: 0027-5107.
DOCUMENT TYPE: Article
LANGUAGE: English
TI DNA damage and topoisomerase II inhibition induced by a benzopsoralen derivative.

L5 ANSWER 27 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1994:162525 BIOSIS
DOCUMENT NUMBER: PREV199497175525
TITLE: Mutation specificity of 8-methoxypsoralen plus two does of UVA irradiation in the hprt gene in diploid human fibroblasts.
AUTHOR(S): Yang, Shih-Ching; Lin, Jin-Guo; Chiou, Chiuan-Chian; Chen, Lin-Yi; Yang, Jia-Ling
CORPORATE SOURCE: Inst. Biomedical Sci., Natl. Tsing Hua Univ., Hsinchu 300

Taiwan
SOURCE: Carcinogenesis (Oxford), (1994) Vol. 15, No. 2, pp. 201-207.
ISSN: 0143-3334.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Mutation specificity of 8-methoxypsoralen plus two does of UVA irradiation
in the hprt gene in diploid human fibroblasts.

L5 ANSWER 28 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1994:230968 BIOSIS
DOCUMENT NUMBER: PREV199497243968
TITLE: The study on the effects of **psoralen** derivatives on epidermal melanocytes in C57BL mice after topical photochemotherapy.
AUTHOR(S): Lee, Seung Min (1); Hann, Seung Kyung; Park, Yoon Kee
CORPORATE SOURCE: (1) Dep. Dermatol., Yonsei Univ. Coll. Med., Seoul South Korea
SOURCE: Annals of Dermatology, (1994) Vol. 6, No. 1, pp. 1-8.
ISSN: 1013-9087.
DOCUMENT TYPE: Article
LANGUAGE: English
TI The study on the effects of **psoralen** derivatives on epidermal melanocytes in C57BL mice after topical photochemotherapy.

L5 ANSWER 29 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1994:17004 BIOSIS
DOCUMENT NUMBER: PREV199497030004
TITLE: Targeted **mutagenesis** of simian virus 40 DNA mediated by a triple helix-forming oligonucleotide.
AUTHOR(S): Havre, Pamela A.; Glazer, Peter M. (1)
CORPORATE SOURCE: (1) Dep. Therapeutic Radiol., Yale Univ. Sch. Med., 333 Cedar St., New Haven, CN 06510 USA
SOURCE: Journal of Virology, (1993) Vol. 67, No. 12, pp. 7324-7331.
ISSN: 0022-538X.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Targeted **mutagenesis** of simian virus 40 DNA mediated by a triple helix-forming oligonucleotide.

L5 ANSWER 30 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1993:411625 BIOSIS
DOCUMENT NUMBER: PREV199396077350
TITLE: UV-induced mutations in a shuttle vector replicated in repair deficient trichothiodystrophy cells differ with those in genetically-related cancer prone xeroderma pigmentosum.
AUTHOR(S): Madzak, Catherine; Armier, Jacques; Stary, Anne; Daya-Grosjean, Leela; Sarasin, Alain (1)
CORPORATE SOURCE: (1) Lab. Molecular Genet., Inst. Recherches Scientifiques Cancer, BP n 8, 94801 Villejuef Cedex France
SOURCE: Carcinogenesis (Oxford), (1993) Vol. 14, No. 7, pp. 1255-1260.
ISSN: 0143-3334.
DOCUMENT TYPE: Article
LANGUAGE: English
TI UV-induced mutations in a shuttle vector replicated in repair deficient trichothiodystrophy cells differ with those in genetically-related cancer

prone xeroderma pigmentosum.

L5 ANSWER 31 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1993:394723 BIOSIS
DOCUMENT NUMBER: PREV199396070023
TITLE: Determination of residual 4'-aminomethyl-4,5',8-trimethylpsoralen and **mutagenicity** testing following **psoralen** plus UVA treatment of platelet suspensions.
AUTHOR(S): Wagner, Stephen J. (1); White, Randy; Wolf, Ludwig; Chapman, John; Robinette, Daniel; Lawlor, Timothy E.; Dodd, Roger Y.
CORPORATE SOURCE: (1) American Red Cross Blood Serv., Jerome H. Holland Lab. Biomed. Sci., 15601 Crabbs Branch Way, Rockville, MD 29855 USA
SOURCE: Photochemistry and Photobiology, (1993) Vol. 57, No. 5, pp. 819-824.
ISSN: 0031-8655.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Determination of residual 4'-aminomethyl-4,5',8-trimethylpsoralen and **mutagenicity** testing following **psoralen** plus UVA treatment of platelet suspensions.

claim 2

L5 ANSWER 32 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1994:94447 BIOSIS
DOCUMENT NUMBER: PREV199497107447
TITLE: Novel **psoralens** with enhanced UVA dependent inactivation of human immunodeficiency virus and reduced **mutagenicity** in the absence of UVA light.
AUTHOR(S): Wollowitz, S. (1); Fang, Y.; Jiatao, P.; Nerio, A.; Spielmann, H. P.; Lin, L.; Behrman, B.; Londe, H.; Alfonso, R.; Corash, L.; Isaacs, S.
CORPORATE SOURCE: (1) Steritech Inc., Concord, CA USA
SOURCE: Blood, (1993) Vol. 82, No. 10 SUPPL. 1, pp. 402A. Meeting Info.: Thirty-fifth Annual Meeting of the American Society of Hematology St. Louis, Missouri, USA December 3-7, 1993
ISSN: 0006-4971.
DOCUMENT TYPE: Conference
LANGUAGE: English
TI Novel **psoralens** with enhanced UVA dependent inactivation of human immunodeficiency virus and reduced **mutagenicity** in the absence of UVA light.

L5 ANSWER 33 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1993:206881 BIOSIS
DOCUMENT NUMBER: PREV199395108106
TITLE: 8-Methoxypsoralen induced mutations are highly targeted at crosslinkable sites of photoaddition on the non-transcribed strand of a mammalian chromosomal gene.
AUTHOR(S): Sage, E.; Drobetsky, E. A.; Moustacchi, E.
CORPORATE SOURCE: CNRS URA 1292, Inst. Curie-Section de Biologie, 26 rue d'Ulm, 75231 Paris Cedex 05 France
SOURCE: EMBO (European Molecular Biology Organization) Journal, (1993) Vol. 12, No. 2, pp. 397-402.

ISSN: 0261-4189.
DOCUMENT TYPE: Article
LANGUAGE: English
TI 8-Methoxypsoralen induced mutations are highly targeted at crosslinkable sites of photoaddition on the non-transcribed strand of a mammalian chromosomal gene.

L5 ANSWER 34 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1993:461750 BIOSIS
DOCUMENT NUMBER: PREV199396106650
TITLE: **Mutagenic** processing of **psoralen** monoadducts differ in normal and Fanconi anemia cells.
AUTHOR(S): Guillouf, Christel; Laquerbe, Agnes; Moustacchi, Ethel; Papadopoulo, Dora
CORPORATE SOURCE: Inst. Curie, Sect. Biol., URA 1292 CNRS, 26 rue d'Ulm, 75231 Paris Cedex 05 France
SOURCE: Mutagenesis, (1993) Vol. 8, No. 4, pp. 355-361.
ISSN: 0267-8357.
DOCUMENT TYPE: Article
LANGUAGE: English
TI **Mutagenic** processing of **psoralen** monoadducts differ in normal and Fanconi anemia cells.

L5 ANSWER 35 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1993:349514 BIOSIS
DOCUMENT NUMBER: PREV199396046514
TITLE: Phototoxic coumarins in limes.
AUTHOR(S): Nigg, H. N. (1); Nordby, H. E.; Beier, R. C.; Dillman, A.; Macias, C.; Hansen, R. C.
CORPORATE SOURCE: (1) Citrus Res. Education Center, Univ. Fla., IFAS, 700 Experiment Station Road, Lake Alfred, FL 33850 USA
SOURCE: Food and Chemical Toxicology, (1993) Vol. 31, No. 5, pp. 331-335.
ISSN: 0278-6915.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Phototoxic coumarins in limes.

L5 ANSWER 36 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1993:281594 BIOSIS
DOCUMENT NUMBER: PREV199396011819
TITLE: **Psoralen** photochemotherapy (PUVA) and pregnancy.
AUTHOR(S): Gunnarskog, Jan G.; Kallen, A. J. Bengt; Lindelof, Bernt G.; Sigurgeirsson, Bardur
CORPORATE SOURCE: Dep. Dermatology, Karolinska Hosp., S-104 01 Stockholom Sweden
SOURCE: Archives of Dermatology, (1993) Vol. 129, No. 3, pp. 320-323.
ISSN: 0003-987X.
DOCUMENT TYPE: Article
LANGUAGE: English
TI **Psoralen** photochemotherapy (PUVA) and pregnancy.

L5 ANSWER 37 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1993:432641 BIOSIS
DOCUMENT NUMBER: PREV199396087266
TITLE: Molecular spectrum of mutations induced at the HPRT locus by a cross-linking agent in human cell lines with different repair capacities.

AUTHOR(S): Papadopulo, D. (1); Laquerbe, A.; Guillouf, C.; Moustacchi, E.
CORPORATE SOURCE: (1) Inst. Curie - Biol., 26 rue d'Ulm, 75231 Paris Cedex 05 France
SOURCE: Mutation Research, (1993) Vol. 294, No. 2, pp. 167-177. ISSN: 0027-5107.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Molecular spectrum of mutations induced at the HPRT locus by a cross-linking agent in human cell lines with different repair capacities.

L5 ANSWER 38 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1993:432642 BIOSIS
DOCUMENT NUMBER: PREV199396087267
TITLE: Cytogenetic evidence for differences in DNA incision activity in xeroderma pigmentosum group A, C and D cells after X-irradiation during G-2 phase.
AUTHOR(S): Parshad, R. (1); Tarone, R. E.; Price, F. M.; Sanford, K. K.
CORPORATE SOURCE: (1) Lab. Cell. Mol. Biol., Natl. Cancer Inst., Bethesda, MD 20892 USA
SOURCE: Mutation Research, (1993) Vol. 294, No. 2, pp. 149-155. ISSN: 0027-5107.
DOCUMENT TYPE: Article
LANGUAGE: English
TI Cytogenetic evidence for differences in DNA incision activity in xeroderma pigmentosum group A, C and D cells after X-irradiation during G-2 phase.

L5 ANSWER 39 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1993:235194 BIOSIS
DOCUMENT NUMBER: PREV199395126369
TITLE: **Mutagenic** and antimutagenic activities of Uncaria tomentosa and its extracts.
AUTHOR(S): Rizzi, Renato; Re, Francesco; Bianchi, Antonio; De Feo, Vincenzo (1); De Simone, Francesco; Bianchi, Livia; Stivala, Lucia Anna
CORPORATE SOURCE: (1) Dip. Chim. delle Sostanze Naturali, Univ. degli Studi 'Federico II', Via Domenico Montesano 49, 80131 Napoli Italy
SOURCE: Journal of Ethnopharmacology, (1993) Vol. 38, No. 1, pp. 63-77. ISSN: 0378-8741.
DOCUMENT TYPE: Article
LANGUAGE: English
TI **Mutagenic** and antimutagenic activities of Uncaria tomentosa and its extracts.

L5 ANSWER 40 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1993:415533 BIOSIS
DOCUMENT NUMBER: PREV199396081258
TITLE: A critical review of the genotoxic potential of electric and magnetic fields.
AUTHOR(S): McCann, Joyce (1); Dietrich, Fred; Rafferty, Charles; Martin, Alice O.
CORPORATE SOURCE: (1) ICF Kaiser Engineers Inc., 1800 Harrison Street, 7th

Floor, Oakland, CA 94612 USA
SOURCE: Mutation Research, (1993) Vol. 297, No. 1, pp. 61-95. ISSN: 0027-5107.
DOCUMENT TYPE: Article
LANGUAGE: English
TI A critical review of the genotoxic potential of electric and magnetic fields.

L5 ANSWER 41 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1993:286820 BIOSIS
DOCUMENT NUMBER: PREV199345004945
TITLE: **Mutagenic** processing of **psoralen** monoadducts differ in normal and Fanconi anemia cells.
AUTHOR(S): Guillouf, C.; Papadopoulo, D.; Laquerbe, A.; Moustacchi, E.
CORPORATE SOURCE: Inst. Curie Biol., Paris France
SOURCE: Environmental and Molecular Mutagenesis, (1993) Vol. 21, No. SUPPL. 22, pp. 26.
Meeting Info.: 24th Annual Scientific Meeting of the Environmental Mutagen Society Norfolk, Virginia, USA April 17-22, 1993
ISSN: 0893-6692.
DOCUMENT TYPE: Conference
LANGUAGE: English
TI **Mutagen**ic processing of **psoralen** monoadducts differ in normal and Fanconi anemia cells.

L5 ANSWER 42 OF 42 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1993:121862 BIOSIS
DOCUMENT NUMBER: PREV199395065962
TITLE: Photobiological activity of certain new methylazapsoralens.
AUTHOR(S): Baccichetti, Francarosa; Bordin, Franco (1); Simonato, Morena; Toniolo, Luana; Marzano, Christine; Rodighiero, Paolo; Chilin, Adriana; Carlassare, Francesco
CORPORATE SOURCE: (1) Dep. Pharmaceutical Sciences, Padua University: Centre di Studio Sulla Chimica Del Farmaco e Del Prodotti, Biologicamente Attivi, C.N.R., Via Marzolo 5,35131 Padova Italy
SOURCE: Farmaco (Rome), (1992) Vol. 47, No. 12, pp. 1529-1541.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English; Italian
TI Photobiological activity of certain new methylazapsoralens.

=> d history

(FILE 'HOME' ENTERED AT 13:59:16 ON 14 AUG 2001)

FILE 'MEDLINE, EMBASE, CAPLUS, SCISEARCH, BIOSIS, REGISTRY' ENTERED AT 13:59:35 ON 14 AUG 2001
L1 15961 S PSORALEN?
L2 1137 S L1 AND MUTAGEN?
L3 960 S L2 AND PY<1998
L4 42 S L3 AND VERTEBRATE
L5 42 DUP REM L4 (0 DUPLICATES REMOVED)

=> s l2 and animal
L6 272 L2 AND ANIMAL

```
=> s l6 and py<1998
   2 FILES SEARCHED...
   4 FILES SEARCHED...
   5 FILES SEARCHED...
'1998' NOT A VALID FIELD CODE
L7          219 L6 AND PY<1998

=> s l7 and trimethyl?
L8           45 L7 AND TRIMETHYL?

=> dup rem l8
DUPLICATE IS NOT AVAILABLE IN 'REGISTRY'.
ANSWERS FROM THESE FILES WILL BE CONSIDERED UNIQUE
PROCESSING COMPLETED FOR L8
L9           35 DUP REM L8 (10 DUPLICATES REMOVED)

=> d l9 ibib abs 1-
YOU HAVE REQUESTED DATA FROM 35 ANSWERS - CONTINUE? Y/(N):y

L9   ANSWER 1 OF 35  CAPLUS  COPYRIGHT 2001 ACS
ACCESSION NUMBER:         1997:121398  CAPLUS
DOCUMENT NUMBER:          126:127852
TITLE:                    Triple helix-forming oligonucleotide conjugates with
                          mutagens for induction of site-specific
                          recombination
INVENTOR(S):              Glazer, Peter M.; Lin, L. Michael; George, Jay
PATENT ASSIGNEE(S):       Yale University, USA; Oncorpharm, Inc.
SOURCE:                   PCT Int. Appl., 48 pp.
                          CODEN: PIXXD2
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.        KIND  DATE           APPLICATION NO.   DATE
     ---------------   ----  --------       ---------------   --------
     WO 9641008         A1   19961219       WO 1996-US9424    19960606 <--
         W:  AU, BR, CA, CN, CZ, FI, HU, IL, JP, KP, KR, MX, NO, NZ, SG, SK,
             UA, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
         RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT,
SE
     US 5776744         A    19980707       US 1995-467126    19950607
     AU 9660995         A1   19961230       AU 1996-60995     19960606 <--
     EP 871771          A1   19981021       EP 1996-918306    19960606
         R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
             IE, FI
PRIORITY APPLN. INFO.:                    US 1995-467126      19950607
                                          WO 1996-US9424      19960606
AB   A method of inducing homologous recombination by site-specific induction
     of DNA damage is described.  The method uses two introduced DNAs: one is
a
     mutagen-linked single-stranded oligonucleotide capable of
     specifically binding to double-stranded DNA to form a triple-stranded
     helix, and the second is a donor DNA fragment capable of undergoing
     homologous recombination with DNA targeted by the oligonucleotide.  The
     oligonucleotide brings the mutagenic moiety to the desired site
     and the damage caused by the mutagen stimulates DNA repair with
     the formation of recombigenic free ends.  The method is demonstrated by
     using psoralen conjugates to induce recombination of the supF
```

gene in COS cells. A recombination frequency with viral donor DNA of 36.3% was obsd.

L9 ANSWER 2 OF 35 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1996:283280 BIOSIS
DOCUMENT NUMBER: PREV199699005636
TITLE: Strand specificity of **mutagenic** bypass replication of DNA containing **psoralen** monoadducts in a human cell extract.
AUTHOR(S): Thomas, David C.; Svoboda, Daniel L.; Vos, Jean-Michel H. (1); Kunkel, Thomas A.
CORPORATE SOURCE: (1) UNC Lineberger Comprehensive Cancer Cent., Sch. Med., Univ. North Carolina, Chapel Hill, NC 27599-7295 USA
SOURCE: Molecular and Cellular Biology, (1996) Vol. 16, No. 5, pp. 2537-2544.
ISSN: 0270-7306.
DOCUMENT TYPE: Article
LANGUAGE: English
AB **Psoralens** are **mutagenic** compounds of vegetable origin that are used as photosensitizing agents in the treatment of various skin diseases, blood cell cancer, and autoimmune disorders. To study the mechanism of **mutagenicity** of **psoralens** in humans, we examined the efficiency and fidelity of simian virus 40 origin-dependent replication in a human cell extract of M13mp2 DNA randomly treated with the **psoralen** derivative 4'-hydroxymethyl-4,5',8-**trimethyl** **psoralen** plus UVA irradiation. Replication of DNA treated with variable amounts of 4'-hydroxymethyl-4,5',8-**trimethyl** **psoralen** and a fixed UVA fluence was inhibited in a concentration-dependent manner. However, covalently closed monomer-length circular replication products were observed. Product analysis by renaturing agarose gel electrophoresis after cross-linking with 250- to 280-nm UV light indicated that approximately 1 of 9 **psoralen** monoadducts was bypassed during in vitro replication. Introduction of product DNA into Escherichia coli to score replication errors in the lacZ-alpha reporter gene demonstrated that replication of the damaged DNA was more **mutagenic** than was replication of undamaged DNA. Sequence analysis of lacZ mutants revealed that damage-dependent replication errors were predominantly T cntdot A fwdarw C cntdot G transitions, transversions at C cntdot G base pairs, and deletions of single A cntdot T base pairs, the last occurring most frequently in homopolymeric runs. A comparison of error specificities with two substrates having the replication origin asymmetrically placed on opposite sides of the mutational target suggests that the lagging-strand replication apparatus is less accurate than the leading-strand replication apparatus for **psoralen** monoadduct-dependent deletion errors. A model is proposed based on the preferential loopout of the monoadducted base from the strand that templates retrograde discontinuous synthesis.

L9 ANSWER 3 OF 35 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1996:192982 BIOSIS
DOCUMENT NUMBER: PREV199698749111
TITLE: Angular furoquinolinones, **psoralen** analogs: Novel antiproliferative agents for skin diseases: Synthesis, biological activity, mechanism of action, and computer-aided studies.
AUTHOR(S): Rodighiero, Paolo; Guiotto, Adriano (1); Chilin, Adriana; Bordin, Franco; Baccichetti, Francarosa; Carlassare,

Francesco; Vedaldi, Daniela; Caffieri, Sergio; Pozzan, A.; Dall'acqua, Francesco
CORPORATE SOURCE: (1) Dep. Pharmaceutical Sci., Via Fr. Marzolo 5, I-35131 Padova Italy
SOURCE: Journal of Medicinal Chemistry, (1996) Vol. 39, No. 6, pp. 1293-1302.
ISSN: 0022-2623.
DOCUMENT TYPE: Article
LANGUAGE: English

AB With the aim of obtaining new potential photochemotherapeutic agents, having increased antiproliferative activity and decreased undesired effects, we have prepared some new furoquinolinones. Two of them have been studied in detail: 1,4,6,8-tetramethyl-2H-furo(2,3-h)-quinolin-2-one (8), and 4,6,8,9-tetramethyl-2H-furo(2,3-h)quinolin-2-one (10). These compounds form a molecular complex with DNA, undergoing intercalation inside the duplex macromolecule, as shown by linear flow dichroism. The complexed ligands, by subsequent irradiation with UV-A light, photobind with the macromolecule forming only monocycloadducts with thymine with cis-syn configuration. In order to evaluate the electronic effects induced by the nitrogen atom in position 1 of 8, semiempirical calculations have been performed on both 4,6,4'-**trimethylangelicin** (TMA) and 8. The results obtained do not clearly differentiate between the two molecules which, at this level of approximation, show the possibility of photoreaction with both the 3,4- and 8,9-olefinic bonds for 8 and the 3,4- and 4',5'-bonds for TMA. In the lower energy conformation of intercalated 8, the furan ring is turned toward the minor groove of the polynucleotide, in such a way that photoreaction of this ring with thymine is favored. These compounds unexpectedly inhibit DNA and RNA synthesis in Ehrlich cells, in the dark. They also show a strong photoantiproliferative activity, 2 orders of magnitude higher than 8-methoxypsoralen (8-MOP), the most used drug for photochemotherapy. Their **mutagenic** activity on Escherichia coli is similar to that of TMA and 8-MOP. On the basis of these results, the compounds should deserve evaluation of their activity in the treatment of hyperproliferative skin diseases.

L9 ANSWER 4 OF 35 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1995:837436 CAPLUS
DOCUMENT NUMBER: 123:248523
TITLE: Chemically modified oligonucleotide for site-directed **mutagenesis**
INVENTOR(S): Glazer, Peter M.; Havre, Pamela A.
PATENT ASSIGNEE(S): Yale University, USA
SOURCE: PCT Int. Appl., 72 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9501364	A1	19950112	WO 1994-US7234	19940624 <--
W: AU, CA, JP				
RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
CA 2166079	AA	19950112	CA 1994-2166079	19940624 <--

AU 9473180	A1	19950124	AU 1994-73180	19940624 <--
AU 691194	B2	19980514		
EP 705270	A1	19960410	EP 1994-923258	19940624 <--
EP 705270	B1	19971229		

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE

JP 09503644	T2	19970415	JP 1994-503585	19940624 <--
AT 161541	E	19980115	AT 1994-923258	19940624
ES 2113118	T3	19980416	ES 1994-923258	19940624

PRIORITY APPLN. INFO.: US 1993-83088 19930625
WO 1994-US7234 19940624

AB A **mutagenic**, triplex-forming oligonucleotide and methods for it use are provided such that the oligonucleotide is chem. modified to incorporate a **mutagen** and forms a triple-stranded nucleic acid mol. with a specific DNA segment of a target DNA mol. Upon formation of the triplex, the **mutagen** is brought into proximity with the target mol. and causes a mutation at a specific site. The mutation activates, inactivates, or alters the activity and function of the target mol. This process would allow the treatment of genetic disorders by gene therapy without the need for a viral vector. Thus, a **psoralen** (4'-hydroxymethyl-4,5-,8-**trimethylpsoralen**) was linked via a 2-carbon linker arm to the 5'-phosphate of a 10-mer or 30-mer oligonucleotide targeted to the supF gene (an Escherichia coli amber suppressor tyrosine tRNA gene) for site-specific **mutagenesis** of the lambda phage genome, the pSP189 SV40 vector, or SV40 DNA in monkey COS cells. After UVA irradn., sequence anal. of mutations in the target gene showed that almost all were in the targeted region, and 56% were the same T:A to A:T transversion at the targeted base pair with a frequency of 0.233% in lambda phage. Targeted **mutagenesis** occurred even more efficiently in mammalian cells (6% of SV40 genomes) than in bacteria.

L9 ANSWER 5 OF 35 EMBASE COPYRIGHT 2001 ELSEVIER SCI. B.V.

ACCESSION NUMBER:	95321045 EMBASE
DOCUMENT NUMBER:	1995321045
TITLE:	Elimination of potential **mutagenicity** in platelet concentrates that are vitally inactivated with **psoralens** and ultraviolet A light.
AUTHOR:	Margolis-Nunno H.; Robinson R.; Ben-Hur E.; Chin S.; Orme T.; Horowitz B.
CORPORATE SOURCE:	Lindsley F. Kimball Research Inst., New York Blood Center, 310 East 67th Street,New York, NY 10021, United States
SOURCE:	Transfusion, (1995) 35/10 (855-862). ISSN: 0041-1132 CODEN: TRANAT
COUNTRY:	United States
DOCUMENT TYPE:	Journal; Article
FILE SEGMENT:	004 Microbiology 005 General Pathology and Pathological Anatomy 025 Hematology 030 Pharmacology 037 Drug Literature Index
LANGUAGE:	English
SUMMARY LANGUAGE:	English

AB Background: For virus sterilization of platelet concentrates (PCs), treatment with aminomethyltrimethyl **psoralen** (AMT) and long-wavelength ultraviolet A light (UVA) has shown efficacy. It has been found that treatment with 50 pg per mL of AMT and 38 J per cm2 of UVA in the presence of 0.35-mM rutin efficiently kills viruses while maintaining platelet integrity. There is, however, concern about the **mutagenic** potential of **psoralens** and UVA (PUVA)-treated PCs. Study Design

and Methods: Adsorption of PUVA-treated PCs with a hydrophobic resin containing C18 as the ligand was used for AMT removal, which was quantitated by the use of radioactive AMT. PUVA-treated PCs, with and without C18 treatment, were examined for solution pH and platelet aggregation response to agonists. In addition, residual AMT activity was determined by AMT's virucidal activity or incorporation into cellular DNA upon a second UVA irradiation and by its **mutagenic** potential in the Ames test. Results: After PUVA treatment of PCs, residual AMT retained virucidal and adduct-forming ability upon re-exposure to UVA, but activities were less than those observed originally. As has been found previously, AMT had **mutagenic** potential following incubation in the dark with rat liver S9 microsomal enzymes. The PUVA treatment reduced this potential by 90 percent. C18 adsorption following PUVA treatment had no negative effect on platelet integrity and eliminated 50 percent of the added radioactive AMT. In addition, all detectable virucidal, nucleic acid-modifying, and **mutagenic** activities of AMT-treated PCs were removed by C18. Conclusion: These results suggest that hydrophobic resin adsorption of PUVA-treated PCs will conveniently remove functional **psoralen**s and eliminates their **mutagenic** potential.

L9 ANSWER 6 OF 35 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 1
ACCESSION NUMBER: 1995:449122 CAPLUS
DOCUMENT NUMBER: 122:259943
TITLE: Genotoxic potential of **psoralen** crosslinks versus monoadducts in normal human lymphoblasts
AUTHOR(S): Laquerbe, A.; Moustacchi, E.; Papadopoulo, D.
CORPORATE SOURCE: Institut Curie-Biologie, URA 1292 CNRS, 26 rue d'Ulm, Paris, 75231/05, Fr.
SOURCE: Mutat. Res. (**1995**), 346(3), 173-9
CODEN: MUREAV; ISSN: 0027-5107
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Using the 4,5',8-**trimethylpsoralen** in combination with the reirradn. protocol, we show that, in normal human lymphoblasts, the cytotoxic potential of photoinduced cross-links (CL) is higher than that of monoadducts (MA). In contrast to cytotoxicity, the significant increase in the proportion of CL, at a const. level of total adducts, had no effect on the induction of mutations at the HPRT locus. Comparison with the data obtained in yeast and rodent cells using the same double irradn. protocol shows that the **mutagenic** potential of CL vs. MA varies between species. This suggests that the equil. between the excision, the recombinational and the **mutagenic** components of the repair pathways which probably det. the **mutagenic** efficiency of CL vs. MA is likely to be species-dependent.

L9 ANSWER 7 OF 35 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 2
ACCESSION NUMBER: 1995:966524 CAPLUS
DOCUMENT NUMBER: 124:78422
TITLE: The **mutagenic** processing of **psoralen** photolesions leaves a highly specific signature at an endogenous human locus
AUTHOR(S): Laquerbe, Agnes; Guillouf, Christel; Moustacchi, Ethel; Papadopoulo, Dora
CORPORATE SOURCE: URA 1292 CNRS, Inst. Curie Section Recherche, Paris, 75231, Fr.
SOURCE: J. Mol. Biol. (**1995**), 254(1), 38-49
CODEN: JMOBAK; ISSN: 0022-2836
DOCUMENT TYPE: Journal
LANGUAGE: English

AB To assess the role of a given genotoxic agent in the etiol. of human cancers, it is useful to establish the mutational specificity of this agent. The aim of this study was to investigate whether the processing of **psoralen** photolesions, interstrand cross-links (CL) and monoadducts (MA), leaves a specific mol. signature in the mutational events produced at an endogenous locus, HPRT. Human lymphoblasts were treated by 4,5',8-**trimethylpsoralen** (Me3Pso) in assocn. with a double irradn. protocol (365 plus 365 nm) which allows us to increase the proportion of CL for a given const. no. of total photoadducts. The mol. spectrum of mutations at the HPRT locus induced in these conditions was compared to the previously reported spectra of mutations induced by the same **psoralen** in combination with a single irradn. of either 365 nm (induction of MA and a low proportion of CL) or 405 nm (producing almost exclusively MA). In all treatment conditions, base substitutions constitute the major type of Me3Pso photoinduced mutations. The majority of base substitutions involve a T residue preferably within a 5'-TpA sequence which corresponds to the favored sites of **psoralen** photoadducts. In other words, the Me3Pso photolesions induce at the endogenous HPRT locus a highly specific signature. Moreover, base substitutions have been essentially found in the non-transcribed strand of the HPRT gene suggesting that the **psoralen** photolesions are preferentially removed from the transcribed strand. In spite of the considerable difference between the proportion of lesions of both types (CL or MA) induced in different treatment conditions, the kind of mutations and their sequence distribution are similar suggesting that the **mutagenic** processing of **psoralen** CL and MA is similar at least for the steps resulting in base substitutions.

L9 ANSWER 8 OF 35 SCISEARCH COPYRIGHT 2001 ISI (R)
ACCESSION NUMBER: 95:92351 SCISEARCH
THE GENUINE ARTICLE: QC766
TITLE: VIRAL INACTIVATION IN PLATELET CONCENTRATES
AUTHOR: DODD R Y (Reprint)
CORPORATE SOURCE: AMER RED CROSS, HOLLAND LAB, 15601 CRABBS BRANCH WAY, ROCKVILLE, MD, 20855 (Reprint)
COUNTRY OF AUTHOR: USA
SOURCE: TRANSFUSION CLINIQUE ET BIOLOGIQUE, (**1994**) Vol. 1, No. 3, pp. 181-186.
ISSN: 1246-7820.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: CLIN
LANGUAGE: ENGLISH
REFERENCE COUNT: 23

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Although the current risk of posttransfusion infection is very low in North America and Western Europe, there continues to be considerable interest in measures to inactivate residual viruses in blood components. The human immunodeficiency virus is of greatest concern, but hepatitis C virus is also considered to be a significant problem. HTLV-I and -II and HBV may also be transmitted by transfusion, although infrequently. It is likely that effective inactivation methods will have to reduce viral titers by about 6 orders of magnitude, including both viruses found free in plasma and those in intracellular compartments. Although it would be most desirable to have a single procedure to inactivate viruses in all blood components, it appears that different methods may be required for plasma, red cells and platelets. To date, the most promising approach for platelets appears to be photochemical inactivation. In general, photoactive compounds fall into two major groups: photodynamic dyes which

are activated by visible Light and act by oxygen dependent generation of reactive molecular species; and ultraviolet-activated intercalating compounds which form covalent adducts with nucleic acids. We have found that photodynamic inactivators are unable to inactivate viruses in platelet concentrates without damaging the platelets. On the other hand, we have shown that aminomethyl **trimethyl psoralen** (AMT), when activated by long-wavelength ultraviolet Light (UVA) can inactivate more than 5 logs of model viruses and HIV while platelet in vitro properties are maintained. Further, unlike photodynamic inactivators, AMT is able to inactivate cell-associated and intracellular viruses and also prevents the replication of integrated HIV genome sequences, as demonstrated by PCR. Platelets which have been exposed to antiviral treatment with AMT and UVA also retain their hemostatic effectiveness in an **animal** model system. One problem with AMT is that it is **mutagenic** and thus may be inappropriate for infusion into patients. Thus, implementation of a **psoralen**/UVA inactivation protocol may require the removal of residual drug from the platelet concentrate. An alternate strategy might be to seek **psoralens** which are non-**mutagenic**. Finally, in the past year or so, much progress has been made in the use of methylene blue for viral inactivation of plasma. Methylene blue is capable of inactivating free virus in conditions which retain the integrity of platelets. However, it appears to be unable to achieve inactivation of intracellular viruses. Consequently, it is unclear when an inactivation method for platelet concentrates could be available for routine use.

L9 ANSWER 9 OF 35 EMBASE COPYRIGHT 2001 ELSEVIER SCI. B.V.DUPLICATE 3
ACCESSION NUMBER: 94070387 EMBASE
DOCUMENT NUMBER: 1 94070387
TITLE: The study on the effects of **psoralen** derivatives on epidermal melanocytes in C57 BL mice after topical photochemotherapy.
AUTHOR: Lee S.M.; Hann S.K.; Park Y.K.
CORPORATE SOURCE: Department of Dermatology, Yonsei Univ. College of Medicine,Seoul, Korea, Republic of
SOURCE: Annals of Dermatology, (1994) 6/1 (1-8).
ISSN: 1013-9087 CODEN: ANDEEM
COUNTRY: Korea, Republic of
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 013 Dermatology and Venereology
037 Drug Literature Index
LANGUAGE: English
SUMMARY LANGUAGE: English
AB Background: Monofunctional **psoralens** plus UVA radiation are not severely phototoxic and have less **mutagenic** activity than bifunctional **psoralens** plus UVA radiation. Objective: The purpose of this study was to evaluate pigment producing effect using various concentrations (0.02%, 0.1%, 0.5%) of monofunctional **psoralens** such as angelicin, khellin and comparing it's effect with TMP in topical photochemotherapy. Method: Ninety-three C57BL mice were painted with either angelicin, khellin or TMP solution in concentrations of 0.02%, 0.1% and 0.5% each and were UVA irradiated. Skin biopsies were performed at 1,3,5 weeks after UVA irradiation. The pigment producing effects were measured by the number, area and perimeter of the melanocytes after topical PUVA. Results: The comparison of melanocyte numbers between different **psoralens** after five weeks of photochemotherapy showed a significant difference in decreasing order of TMP, khellin and angelicin. The area and perimeter of melanocytes were larger in the TMP group after five weeks photochemotherapy than the other

group. However in the khellin and angelicin group, the area and perimeter of melanocytes were not increased by increasing the frequency of the UVA irradiation. Conclusion: The number, area and perimeter of melanocytes after topical PUVA increased in the TMP group compared to angelicin or khellin group. We expect the clinical application of angelicin and khellin in vitiligo is possible considering the result of the study of pigment producing effect with a higher concentration and higher dose of UVA.

L9 ANSWER 10 OF 35 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1994:46852 CAPLUS
DOCUMENT NUMBER: 120:46852
TITLE: Targeted **mutagenesis** of simian virus 40 DNA mediated by a triple helix-forming oligonucleotide
AUTHOR(S): Havre, Pamela A.; Glazer, Peter M.
CORPORATE SOURCE: Sch. Med., Yale Univ., New Haven, CT, 06510, USA
SOURCE: J. Virol. (**1993**), 67(12), 7324-31
CODEN: JOVIAM; ISSN: 0022-538X
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Triple-helical DNA can be formed by oligonucleotides that bind as third strands of DNA in a sequence-specific manner in the major groove in homopurine/homopyrimidine stretches in duplex DNA. Such triple helix-forming oligonucleotides have been used to inhibit gene expression by blocking transcription factor access to promoter sites in transient expression assays. In an alternative approach to genetic manipulation using triplex DNA, the triplex-forming oligonucleotides were used to produce site-specific, targeted mutations in a viral genome in order to achieve a permanent, heritable effect on gene function and expression. A triplex-forming oligonucleotide linked to a **psoralen** deriv. at its 5' end was used to achieve targeted **mutagenesis** in a simian virus 40 (SV40) vector genome. Site-specific triplex formation delivers the **psoralen** to the targeted site in the SV40 DNA. Photoactivation of the **psoralen** yields adducts and thereby mutations at that site. Mutations were produced in the target gene in >6% of the viral genomes. DNA sequence anal. of the mutations in the target gene showed that all were in the targeted region, and 55% the same T:A-to-A:T transversion precisely at the targeted base pair. In control expts., no **mutagenesis** above the background frequency in the assay was produced by a non-triplex-forming, **psoralen**-linked oligonucleotide unless a vast excess of this oligonucleotide was used, demonstrating the specificity of the targeted **mutagenesis**. This frequency of targeted **mutagenesis** of SV40 in monkey cells represents a 30-fold increase relative to similar expts. using .lambda. phage in bacteria, suggesting that fixation of the triplex-directed lesion into a mutation occurs more efficiently in mammalian cells. If the ability to reproducibly and predictably target mutations to sites in viral DNA in vitro by using modified oligonucleotides can be extended to DNA in vivo, this approach may prove useful as a technique for gene therapy, as a strategy for antiviral therapeutics, and as a tool for genetic engineering.

L9 ANSWER 11 OF 35 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 4
ACCESSION NUMBER: 1993:490188 CAPLUS
DOCUMENT NUMBER: 119:90188
TITLE: Determination of residual 4'-aminomethyl-4,5',8-

trimethylpsoralen and **mutagenicity** testing following **psoralen** plus UVA treatment of platelet suspensions

AUTHOR(S): Wagner, Stephen J.; White, Randy; Wolf, Ludwig; Chapman, John; Robinette, Daniel; Lawlor, Timothy E.; Dodd, Roger Y.

CORPORATE SOURCE: Jerome H. Holland Lab., Am. Red Cross Blood Serv., Rockville, MD, 29855, USA

SOURCE: Photochem. Photobiol. (**1993**), 57(5), 819-24
CODEN: PHCBAP; ISSN: 0031-8655

DOCUMENT TYPE: Journal

LANGUAGE: English

AB **Psoralens** and UVA light have been used in the lab. to study the inactivation of viruses that may be infrequently present in platelet concs. that are prepd. for transfusion. To evaluate safety aspects of the treatment of platelet suspensions with 4'-aminomethyl-4,5',8-**trimethylpsoralen** (AMT), residual levels and **mutagenic** potential of AMT are examd. after UVA phototreatment. 4'-Aminomethyl-4,5',8-**trimethylpsoralen**, at a final concn. of 40 .mu.g/mL, was added to platelet suspensions which contained 16% plasma and a synthetic medium. Platelet suspensions contg. AMT were irradiated with up to 7.2 J/cm2 UVA light under normal oxygen levels. Residual levels of AMT were detd. by HPLC and a bioassay based on bacteriophage .phi.6 inactivation. The photodestruction of AMT or its activity by UVA was characterized by a D37 value of 0.6 and 0.3 J/cm2 with HPLC or bioassay, resp. At 2.4 J/cm2 UVA, which results in .apprx.5 log10 inactivation of vesicular stomatitis virus (VSV) and retention of platelet in vitro properties, 12% (HPLC) to 9% (bioassay) AMT remained. Like other **psoralens**, AMT was found to bind to serum proteins as shown by ultrafiltration. Results are consistent with .apprx.36% of the initial drug load binding primarily to serum albumin. It was detd. using 3H-AMT that 9-18% of radioactivity was bound to platelets in the absence of irradn. Similar fractions (13-18%) of AMT were bound to platelets after 3.6 J/cm2 UVA irradn., and 8-10% of total AMT was assocd. with saline-washed irradiated platelets and is presumably tightly bound. **Mutagenicity** testing (Ames test, in the absence of UVA) was also carried out on the UVA irradiated platelet samples. With Salmonella tester strains which detect primarily base substitution mutations (TA100, TA1535 and TA102), no increase from background **mutagenesis** levels was obsd. with any of the samples. However, tester strains which detect frameshift mutations (TA98, TA1537, and TA1538) displayed significant increases in histidine revertants over background levels for irradiated and nonirradiated AMT-contg. samples tested in the presence of S9 microsomal enzymes. In the absence of S9 activation, a **mutagenic** response was obsd. only with tester strain TA1537. All frameshift tester strains exhibited decreased nos. of induced revertants with lower residual AMT concns. (which correlated with higher UVA dose). Significant **mutagenesis** was still obsd. for platelet suspensions irradiated with virucidal levels of UVA which maintain platelet in vitro function (2.4 J/cm2). These results suggest that residual available AMT is **mutagenic** in the Ames test and that the obsd. frameshift mutations may be caused by binding of AMT or its metabolites to nucleic acids in the absence of UVA light.

L9 ANSWER 12 OF 35 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 5

ACCESSION NUMBER: 1994:128597 CAPLUS

DOCUMENT NUMBER: 120:128597

TITLE: **Mutagenic** processing of **psoralen**

monoadducts differ in normal and Fanconi anemia cells

AUTHOR(S): Guillouf, Christel; Laquerbe, Agnes; Moustacchi, Ethel; Papadopoulo, Dora

CORPORATE SOURCE: Sect. Biol., Inst. Curie, Paris, 75231, Fr.

SOURCE: Mutagenesis (**1993**), 8(4), 355-61
CODEN: MUTAEX; ISSN: 0267-8357

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The mol. spectra of mutations photoinduced (405 nm) by 4,5',8-**trimethylpsoralen** monoadducts (MA), at an endogenous locus, hypoxanthine-guanine phosphoribosyltransferase (HPRT) in normal and in a Fanconi anemia (FA) lymphoblast cell line, complementation group D, are presented. The authors show that, in normal cells, MA induce only base substitutions. In contrast, in FA cells which are partially deficient in the incision of MA, deletions are preferentially induced over point mutations (62% of the total). Although the proportion of base substitutions is lower in FA cells, their type and sequence distribution are similar in FA and normal cell lines. The majority of base substitutions are located at sites of **psoralen** MA which suggest that 4,5',8-**trimethylpsoralen** photoinduced mutations are targeted and preferentially formed in the nontranscribed strand. Moreover, point mutations induced by MA in normal and FA cells are not homogeneously distributed, they preferentially occur in exon 8 of the HPRT gene. This heterogeneous distribution of mutations is ascribed to processing of MA. Great similarities were found between normal and FA cells with respect to the nature and location of point mutation at the HPRT gene; the high proneness to deletions remains one of the major instability features of FA.

L9 ANSWER 13 OF 35 CAPLUS COPYRIGHT 2001 ACS DUPLICATE 6

ACCESSION NUMBER: 1993:532862 CAPLUS

DOCUMENT NUMBER: 119:132862

TITLE: Molecular spectrum of mutations induced at the HPRT locus by a cross-linking agent in human cell lines with different repair capacities

AUTHOR(S): Papadopoulo, D.; Laquerbe, A.; Guillouf, C.; Moustacchi, E.

CORPORATE SOURCE: Inst. Curie - Biol., CNRS, Paris, Fr.

SOURCE: Mutat. Res. (**1993**), 294(2), 167-77
CODEN: MUREAV; ISSN: 0027-5107

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Mol. characterization of mutations photoinduced by a crosslinking agent, 4,5',8-**trimethylpsoralen** (Me3Pso), in normal human lymphoblasts was conducted in parallel with lymphoblasts derived from Fanconi anemia patients. Such cells have been previously described to be impaired in repair of **psoralen** photolesions. The endogenous HPRT locus was used as a target gene. The treatment of cells with Me3Pso in combination with 365 nm irradn. leads to the formation of interstrand cross-links, and specific monoadducts. The authors anal. revealed that the **mutagenic** processing of Me3Pso photoadducts in normal human cells results essentially in base substitutions (84%). These are localized to sequences shown previously to be favored for the formation of Me3Pso monoadducts. The **mutagenic** processing of the same lesions in Fanconi anemia cells results in fewer base substitutions (22%), with deletions (66%) being the predominant class of mutation. In contrast to prokaryotic systems, frameshifts are poorly represented among Me3Pso induced mutations in human cells. In spite of important differences

between the kinds of mutations obsd. in the two cell lines, the authors anal. reveals similarities in the type of base substitutions and their sequence distribution. In both normal and Fanconi anemia cell lines mutations, mostly targeted on thymine residues, are preferentially located on the non-transcribed strand.

L9 ANSWER 14 OF 35 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1993:432642 BIOSIS
DOCUMENT NUMBER: PREV199396087267
TITLE: Cytogenetic evidence for differences in DNA incision activity in xeroderma pigmentosum group A, C and D cells after X-irradiation during G-2 phase.
AUTHOR(S): Parshad, R. (1); Tarone, R. E.; Price, F. M.; Sanford, K. K.
CORPORATE SOURCE: (1) Lab. Cell. Mol. Biol., Natl. Cancer Inst., Bethesda, MD 20892 USA
SOURCE: Mutation Research, (1993) Vol. 294, No. 2, pp. 149-155. ISSN: 0027-5107.
DOCUMENT TYPE: Article
LANGUAGE: English
AB The capacity of cells to incise DNA to remove altered sites after DNA damage can be determined from the rate of DNA-strand break accumulation in the presence of an inhibitor of DNA-repair synthesis, such as 1-beta-D-arabinofuranosylcytosine (ara-C). Because each chromatid contains a single continuous molecule of double-stranded DNA, chromatid breaks and gaps, i.e., non-displaced breaks, represent unrepaired DNA-strand breaks. The accumulation of chromatid breaks and gaps after X-irradiation in the presence of ara-C thus provides a measure of DNA incision activity. Addition of ara-C to skin fibroblasts or stimulated blood lymphocytes from normal individuals at intervals after X-irradiation significantly increased frequencies of chromatid breaks and/or gaps. In contrast, addition of ara-C to XP cells of complementation groups A and D had a negligible effect and a significant but less than normal effect on XP cells of complementation group C and one sample of blood lymphocytes of undetermined complementation group. The results thus show negligible incision activity after G-2 phase X-irradiation in XP-A and XP-D cells and a level higher but less than normal in XP-C cells.

L9 ANSWER 15 OF 35 BIOSIS COPYRIGHT 2001 BIOSIS
ACCESSION NUMBER: 1993:286820 BIOSIS
DOCUMENT NUMBER: PREV199345004945
TITLE: Mutagenic processing of **psoralen** monoadducts differ in normal and Fanconi anemia cells.
AUTHOR(S): Guiguouf, C.; Papadopoulo, D.; Laquerbe, A.; Moustacchi, E.
CORPORATE SOURCE: Inst. Curie Biol., Paris France
SOURCE: Environmental and Molecular Mutagenesis, (1993) Vol. 21, No. SUPPL. 22, pp. 26.
Meeting Info.: 24th Annual Scientific Meeting of the Environmental Mutagen Society Norfolk, Virginia, USA April 17-22, 1993
ISSN: 0893-6692.
DOCUMENT TYPE: Conference
LANGUAGE: English

L9 ANSWER 16 OF 35 MEDLINE DUPLICATE 7
ACCESSION NUMBER: 93191862 MEDLINE
DOCUMENT NUMBER: 93191862 PubMed ID: 1294168
TITLE: Photobiological activity of certain new methylazapsoralens.
AUTHOR: Zaccichetti F; Bordin F; Simonato M; Toniolo L; Marzano C; Rodighiero P; Chilin A; Carlassare F
CORPORATE SOURCE: Department of Pharmaceutical Sciences, Padua University, Italy.
SOURCE: FARMACO, **(1992 Dec)** 47 (12) 1529-41.
Journal code: ACZ; 8912641. ISSN: 0014-827X.
PUB. COUNTRY: Italy
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 9304
ENTRY DATE: Entered STN: 19930423
Last Updated on STN: 19930423
Entered Medline: 19930413

AB The photobiological activity of a series of **psoralen** isosters carrying a nitrogen atom at 8 position, new potential drugs for the photochemotherapy of hyperproliferative skin diseases, have been studied; the more active derivatives appeared to be 5,4'-dimethyl-8-azapsoralen and 3,4,4'-**trimethyl**-8-azapsoralen which induced a strong inhibition of DNA synthesis in Ehrlich ascites cells, very similar to that provoked by 8-methoxypsoralen, the furocoumarin at present used in photochemotherapy. Such compounds induced a small amount of inter-strand DNA cross-links and were non phototoxic when assayed on guinea-pig skin; however, both derivatives appeared to be highly **mutagenic** in E. coli WP2 TM6. This strain contains the plasmid R46 and it is proficient in DNA repair, and therefore monoadducts do not should be **mutagenic** in such a strain. Because the first steps of excision, which remove monoadducts, and of the main cross-link repair use the same enzymes (produced by the uvrABC complex), in the presence of a great number of monofunctional lesions, it is possible that there are not sufficient enzyme molecules for removing cross-links according this pathway, which could be repaired by a second one, uvrABC independent and based on glycosilase activity, which works at reduced levels and is much less accurate.

L9 ANSWER 17 OF 35 EMBASE COPYRIGHT 2001 ELSEVIER SCI. B.V.
ACCESSION NUMBER: 2003183 EMBASE
DOCUMENT NUMBER: 1993135183
TITLE: Molecular analysis of mutations induced by 4'-hydroxymethyl-4,5',8-**trimethylpsoralen** and UVA in the mouse HPRT gene.
AUTHOR: Leteve J.
CORPORATE SOURCE: Laboratory of Microbiology, Institute of Pathology, University of Liege, B-4000 Liege, Belgium
SOURCE: Journal of Photochemistry and Photobiology B: Biology, 1993, 12/1 (37-55).
ISSN: 1011-1344 CODEN: JPPBEG
COUNTRY: Switzerland
DOCUMENT TYPE: Journal; Article
FILE SEGMENT: 013 Dermatology and Venereology
012 Human Genetics
037 Clinical Biochemistry

LANGUAGE: English
SUMMARY LANGUAGE: English

AB The effects of [illegible] reaction photosensitized by 4'-hydroxymethyl-4,5',8-**trimethylpsoral**n (HMT) on a mouse lymphoma cell line have been examined. Using the hypoxanthine phosphoribosyltransferase (HPRT) locus as target gene, a **mutagenic** effect of the photoreaction can be detected concomitantly with a loss of cell viability. Isolation of HPRT deficient clones has permitted a molecular characterization of the mutational pattern induced by the photosensitization reaction mediated by HMT. Southern blotting analysis demonstrated that the HPRT deficiency could not be correlated with gene deletions larger than 300 bp. Using polymerase chain reaction on both DNA and cDNA, amplification products have been cloned into M13mp18 and sequenced. Base transversions targeted on thymine residues have been located in exon 2, 3, 8 and 9 together with spontaneous frameshift mutations occurring in a run of guanine residues in exon 3. HPRT deficiencies owing to mutations arising in the HPRT promoter region have also been observed. Dot and Northern blot analysis revealed that the photoreaction could lead to either a reduced level of gene transcription or a complete absence of HPRT m-RNA. Using polymerase chain reaction amplification and agarose gel electrophoresis, deletions in the HPRT promoter have been observed and correlated to deficient enzyme expression.

L9 ANSWER 18 OF 35 MEDLINE DUPLICATE 8
ACCESSION NUMBER: 91371789 MEDLINE
DOCUMENT NUMBER: 91371789 PubMed ID: 1821628
TITLE: Psoralens: new potential photochemotherapeutic agents for psoriasis.
AUTHOR: Dall'Acqua F; Caffieri S; Miolo G; Dall'Acqua F; Baccichetti F; Carlotto A; Benetollo F; Bombieri G; Recchia G; Rodighiero P; Rosfolini M
CORPORATE SOURCE: Department of Pharmaceutical Sciences of the University, Padova, Italy.
SOURCE: FARMACO, **(1991 Dec)** 46 (12) 1407-33.
Journal code: ACZ; 8912641. ISSN: 0014-827X.
PUB. COUNTRY: Italy
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199203
ENTRY DATE: Entered STN: 19920911
Last Updated on STN: 19920911
Last Updated Medline: 19920824

AB New bioisosters of **psoralen**, obtained by replacing carbon 8 of the central benzene ring with a nitrogen, were studied from the photochemical, biological and phototherapeutic points of view. In particular, 4,4',5'-dimetyl, 4,4',5'-**trimethyl** and 3,4,4',5'-tetramethylazapsoralen were studied. The crystal and molecular structure of 4,4',5'-**trimethylazapsoralen**, obtained by X ray diffraction, was also reported. Like **psoralen**, these compounds form a molecular complex with DNA, undergoing intercalation inside the double helix of the macromolecule. When irridiated with long ultraviolet light (365 nm), the intercalated drug photoconjugates covalently to the macromolecule, forming mono- and diadducts. The photobinding rate show the following order of magnitude: 4,4',5'-trimetylazapsoralen (4,4',5'-TMAP) =

3,4,4',5'-tetra [illegible]ylazapsoralen (3,4,4',5'-TMAP) greater than 4',5'-dimethyl[illegible]psoralen (4',5'-DMAP) = 4,4'-dimethylazapsoralen (4,4'-DMAP). Th[illegible]DNA photobinding rate of 8-methoxypsoralen (8-MOP), taken as reference co[illegible]und, is similar to that of the two dimetylazapsoralens but lower than [illegible]and tetramethyl derivatives. The ability of azapsoralens to[illegible]n cross-links in DNA is lower than that of 8-MOP. However, capaci[illegible]o induce cross-links does not parallel the DNA photobinding ra[illegible]; it is higher for **trimethyl** derivate and lower for tetramethyl[illegible]psoralen. Azapsoralens show evident antiproliferative activity. The t[illegible]ne **trimethyl** derivative is the most active, followed by tetrametyl, [illegible]h these compounds showing activity slightly higher than that of 8-MOP. [illegible]wo dimethylderivatives are less active. The mautagenic activity of aza[illegible]lens on E. coli WP2 TM6 is lower than that of 8-MOP in the same condi[illegible]ns. The new compounds do not show any skin phototoxicity on guinea pig s[illegible]n the basis of its DNA photobinding, antiproliferat[illegible]ivity, **mutagenicity** and lack of skin phototoxicity, [illegible]'-TMAP was chosen for clinical evaluation. Clinical results obtaine[illegible]by topical treatment of psoriatic plaques reveal evident therapeutic eff[illegible]eness and clearing is between good and moderate, although 8-MOP, [illegible]as reference compound, is more effective.

L9 ANSWER 19 OF 3[illegible] MEDLINE
ACCESSION NUMBER: [illegible]241 MEDLINE
DOCUMENT NUMBER: [illegible]241 PubMed ID: 1811623
TITLE: [illegible]angelicins: structure activity studies on the role of [illegible]groups present in 3,4 and 4',5' photoreactive sites.
AUTHOR: [illegible]di D; Dall'Acqua F; Baccichetti F; Carlassare F; [illegible]n F; Rodighiero P; Manzini P; Guiotto A
CORPORATE SOURCE: [illegible]ment of Pharmaceutical Sciences, University of [illegible], Italy.
SOURCE: [illegible]O, **(1991 Nov)** 46 (11) 1381-406.
[illegible]l code: ACZ; 8912641. ISSN: 0014-827X.
PUB. COUNTRY: [illegible]
[illegible]l; Article; (JOURNAL ARTICLE)
LANGUAGE: [illegible]sh
FILE SEGMENT: [illegible]ty Journals
ENTRY MONTH: [illegible]
ENTRY DATE: [illegible]d STN: 19920619
[illegible]pdated on STN: 19920619
[illegible]d Medline: 19920609

AB The effect of [illegible]roduction of one, two or three methyl groups at the level of 3,4 o[illegible]', ' photoreactive site of angelicin, in terms of extent of intercalatic[illegible] DNA-photobinding, was studied. The introduction of one methyl grou[illegible]n in the 3 or 4 and in 4' or 5' position increases the affinity of an[illegible]n toward DNA for the molecular complex formation and enhances the D[illegible]obinding, even if to a different extent. The increase is more pronou[illegible]r occupancy of 5' or 4' position; much less pronounced is [illegible]ancement in the case of 3 or 4 positions. The introduction o[illegible]wo methyl groups in 3,4 or in 4',5' positions leads to an increased capa[illegible]o form the intercalated complex with DNA; the photoreactivity [illegible]so enhanced, but to a larger extent for 4',5'-dimethyl[illegible]in. No steric hindrance, therefore, seems to be

exerted by the [illegible]duction of one or two methyl groups at the level of the photoreacti[illegible]ties of angelicin. The introduction of a third methyl group in 4',5'-[illegible]yl or in 3,4-dimethylangelicin exhibits a strong enhancement of [illegible]A photobinding; in particular 4,4',5'-**trimethylangeli**[illegible]pears the most photoreactive towards DNA. Angelicins car[illegible]ethyl groups in 3,4 positions exhibit lower antiproliferat[illegible]ctivity than derivatives carrying methyl groups in 4',5' positions. No correlation was observed between antiproliferative activity and DN[illegible]obinding; may be that the presence of methyl groups in 3,4 or in 4'[illegible]sitions affects the type of cycloadducts formed. The different ratio[illegible]ducts may affect the antiproliferative effect. (ABSTRA[illegible]CATED AT 250 WORDS)

L9 ANSWER 20 OF 3[illegible] EDLINE
ACCESSION NUMBER: [illegible]80 MEDLINE
DOCUMENT NUMBER: 122 [illegible]80 PubMed ID: 2027904
TITLE: [illegible]'-**trimethyl**-8-azapsoralen, a [illegible]otoreactive and non-skin-phototoxic bifunctional [illegible]oster of **psoralen**.
AUTHOR: [illegible]i D; Dall'Acqua F; Caffieri S; Baccichetti F; [illegible]sare F; Bordin F; Chilin A; Guiotto A
CORPORATE SOURCE: [illegible]ment of Pharmaceutical Sciences, University of [illegible], Italy.
SOURCE: [illegible]HEMISTRY AND PHOTOBIOLOGY, **(1991 Jan)** 53 [illegible]3-8.
[illegible]l code: P69; 0376425. ISSN: 0031-8655.
PUB. COUNTRY: [illegible]D: United Kingdom
[illegible]l; Article; (JOURNAL ARTICLE)
LANGUAGE: [illegible]h
FILE SEGMENT: [illegible]ty Journals
ENTRY MONTH:
ENTRY DATE: [illegible]d STN: 19910630
[illegible]pdated on STN: 19910630
[illegible]d Medline: 19910610
AB Photochemical [illegible]otobiological properties of a new isoster of **psoralen**, 4,4', [illegible]**methyl**-8-azapsoralen (4,4',5'-TMAP), [illegible]been studied. This compound shows a high DNA-photobindi[illegible]e, higher than that of 8-methoxypsoralen (8-MOP), forming both m[illegible]cts and inter-strand cross-links. The yield of cross-links, ho[illegible] is markedly lower than that of 8-MOP. Antiproliferat[illegible]ivity of 4,4',5'-TMAP, in terms of DNA synthesis inhibition in [illegible]ascites tumor cells, is higher than that of 8-MOP. **Mutagenic** activ[illegible]y E. coli WP2 R46+ cells appeared similar to or even lower [illegible]at of 8-MOP. This new compound applied on depilated guinea pig skin[illegible]irradiated with UVA did not show any skin-phototoxic[illegible]. On the basis of these properties 4,4',5'-TMAP appears to be a potent[illegible]tochemotherapeutic agent.

L9 ANSWER 21 OF 3[illegible] EARCH COPYRIGHT 2001 ISI (R)
ACCESSION NUMBER: [illegible]725 SCISEARCH
THE GENUINE ARTICLE: [illegible]
TITLE: [illegible]MIC IMMUNOSUPPRESSION OF CELL-MEDIATED [illegible]E-REACTIONS BY A MONOFUNCTIONAL **PSORALEN** [illegible]ULTRAVIOLET-A RADIATION
AUTHOR: [illegible]CH S E (Reprint)
CORPORATE SOURCE: [illegible]TEXAS, MD ANDERSON CANC CTR, DEPT IMMUNOL, BOX 178, HOLCOMBE BLVD, HOUSTON, TX, 77030 (Reprint)
COUNTRY OF AUTHOR: [illegible]
SOURCE: [illegible]DERMATOLOGY PHOTOIMMUNOLOGY & PHOTOMEDICINE, ([illegible]991) Vol. 8, No. 3, pp. 116-122.

ISSN: 0108-9684.
DOCUMENT TYPE: [illegible]; Journal
FILE SEGMENT:
LANGUAGE: [illegible] SH
REFERENCE COUNT: [illegible]

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Because of the undesirable side effects associated with the use of 8-methoxypsoralen and long-wave ultraviolet A (UVA) radiation in the treatment of skin disorders such as psoriasis, the use of monofunctional **psoralens**, which are less erythemogenic, less **mutagenic**. and generally less phototoxic, has received considerable attention. Little is known, however, about the immunosuppressive properties of monofunctional **psoralens**. The purpose of this study was to examine the effects of parenteral administration of a monofunctional **psoralen**, angelicin, plus exposure to UVA radiation on the immune response. Injection of angelicin followed by exposure to UVA radiation significantly suppressed delayed-type hypersensitivity to alloantigen in a dose-dependent fashion. Similarly, the capacity of spleen cells from the angelicin and UVA-treated **animals** to proliferate to alloantigen was significantly suppressed. The suppression was specific for the alloantigen used to sensitize the angelicin and UVA-treated **animals** and was associated with the appearance of splenic antigen-specific suppressor T lymphocytes. These data demonstrate that the effect of systemic administration of a monofunctional **psoralen** followed by UVA exposure on the immune response is similar to that seen following the administration of bifunctional **psoralens**. These findings also indicate that the severe skin phototoxicity associated with the use of a bifunctional **psoralen** and UVA radiation is not necessary for the induction of systemic immunosuppression. Furthermore, the induction of systemic antigen-specific immunosuppression by angelican plus UVA, without concurrent skin phototoxicity, suggests the possibility of using this and related compounds to specifically inhibit unwanted immune reactions.

L9 ANSWER 22 OF [illegible] EDLINE
ACCESSION NUMBER: [illegible] 71 MEDLINE
DOCUMENT NUMBER: [illegible] 71 PubMed ID: 2337519
TITLE: [illegible]ylangelicins: new monofunctional [illegible]hemotherapeutic agents for psoriasis.
COMMENT: [illegible]t in: Br J Dermatol. 1991 Jan;124(1):112-3
AUTHOR: [illegible] folini M; Recchia G; Boi S; Piscioli F; Bordin F; [illegible]cchetti F; Carlassare F; Tamaro M; Pani B; Baburdi N; +
CORPORATE SOURCE: [illegible]on of Dermatology, Hospital of Santa Chiara, Trento, [illegible]
SOURCE: [illegible]l JOURNAL OF DERMATOLOGY, **(1990 Apr)** 122 [illegible]3-24. [illegible]l code: AW0; 0004041. ISSN: 0007-0963.
PUB. COUNTRY: [illegible]D: United Kingdom
[illegible]l; Article; (JOURNAL ARTICLE)
LANGUAGE: [illegible]n
FILE SEGMENT: [illegible]ty Journals
ENTRY MONTH: [illegible]
ENTRY DATE: [illegible]d STN: 19900720
[illegible]pdated on STN: 19900720
[illegible]d Medline: 19900615

AB The monofunc[illegible]ocoumarins, the 6-methylangelicins, were tested for their antipr[illegible]ve activity with various **animal** models and

for genotoxici[illegible] in micro-organisms and in mammalian cells. The most active compoun[illegible],4,4'-**trimethylangelicin**, which showed a high antipro[illegible]e effect and reduced genotoxicity in comparison with 8-methoxypsora[illegible](MOP). Some of these compounds were also tested clinically by [illegible] application on 17 patients with psoriasis. They appeared to [illegible] ctive than 8-MOP in clearing psoriasis without inducing skin [illegible]xicity. The methylangelicins also caused skin pigmentation.

L9 ANSWER 23 OF [illegible] EDLINE
ACCESSION NUMBER: [illegible]03 MEDLINE
DOCUMENT NUMBER: [illegible]03 PubMed ID: 2121936
TITLE: [illegible] of furocoumarin-plus-UVA-induced damage and [illegible]nic consequences in eukaryotic cells.
AUTHOR: [illegible]ck D; Dardalhon M; Magana-Schwencke N
CORPORATE SOURCE: [illegible]tut Curie-Section de Biologie, CNRS UA 1292, Paris, [illegible]e.
SOURCE: [illegible]AL OF PHOTOCHEMISTRY AND PHOTOBIOLOGY. B, BIOLOGY, (1990 **Jun**) 6 (1-2) 221-36.
[illegible]l code: JLI; 8804966. ISSN: 1011-1344.
PUB. COUNTRY: [illegible]rland
[illegible]l; Article; (JOURNAL ARTICLE)
LANGUAGE: [illegible]h
FILE SEGMENT: [illegible]ty Journals
ENTRY MONTH: [illegible]
ENTRY DATE: [illegible]ed STN: 19910208
[illegible]pdated on STN: 19910208
[illegible]d Medline: 19901213

AB In the prese[illegible]ar-UV radiation (UVA) furocoumarins (**psoralens**) pl[illegible]e defined lesions in DNA, i.e. monoadducts and interstr[illegible]links. Their use in photochemotherapy (**psoralen** plu[illegible]VA) treatment) and cosmetics raises questions concerning th[illegible]ability of these lesions and their genotoxic consequences. [illegible]e analysed the repair of **psoralen** photoadducts [illegible]red eukaryotic cells, such as yeast and mammalian cells, for fu[illegible]arins of photochemotherapeutic interest. In yeast, the interaction of [illegible] pathways differs in exogenous (plasmid) and endogenous ([illegible]al) DNA. The order of **mutagenic** activity is 4,5',8-**trimeth**[illegible]**len** greater than 5-methoxypsoralen greater than 8-methox[illegible]n greater than 7-methylpyrido[3,4-c]**psoralen** greater than [illegible]noxypsoralen. The **mutagenicity** is dependent on **psoralen** [illegible]lity, concentration and bioavailability, maximal UVA [illegible], [illegible]velength, dose (fluence) rate and presence or absence of chemical [illegible]. It probably involves an inducible component. Chromosome b[illegible]ccurs during the repair period after PUVA treatment. It appears th[illegible]enotoxic effects of **psoralens** are produced by a specific [illegible]ment of induced photolesions and the interaction of different re[illegible]ems.

L9 ANSWER 24 OF [illegible] EDLINE DUPLICATE 9
ACCESSION NUMBER: [illegible]95 MEDLINE
DOCUMENT NUMBER: [illegible]95 PubMed ID: 2125562
TITLE: [illegible]iological studies with dioxetanes in isolated DNA, [illegible]ria, and mammalian cells.
AUTHOR: [illegible]; Beinhauer A; Mosandl T; Saha-Moller C; Vargas F; [illegible] Muller E; Schiffmann D; Wild D
CORPORATE SOURCE: [illegible]ute of Organic Chemistry, University of Wurzburg, [illegible] Republic of Germany.
SOURCE: [illegible]NMENTAL HEALTH PERSPECTIVES, **(1990 Aug)** 88 [illegible]. Ref: 32

l code: EI0; 0330411. ISSN: 0091-6765.
PUB. COUNTRY: States
l; Article; (JOURNAL ARTICLE)
l Review; (REVIEW)
W, TUTORIAL)
LANGUAGE: lish
FILE SEGMENT: ity Journals
ENTRY MONTH:
ENTRY DATE: d STN: 19910329
pdated on STN: 19910329
d Medline: 19910228

AB 1,2-Dioxetan- efficient chemical sources of triplet excited carbonyl compounds, w- obs-rved to be genotoxic in isolated DNA, bacteria, and cultured mam- ian cells. In superhelical DNA of bacteriophage PM2, various alky- and hydroxyalkyl-substituted dioxetanes (1) induced predominantly endonuclease-sensitive base modifications and only few single strand- eaks. With a specific endonuclease a small fraction of the base modific- ons s identified as pyrimidine dimers. The **psoralen** dio- ane a) or PsD bound photochemically to calf thymus DNA a- he al na-pyrone ring of **psoralen** (fluorescence measurements . Photo inding was also observed when calf thymus DNA was incubated wi- **psora** en and 3-hydroxymethyl-3,4,4-**trimethyl**-1,2- ioxet ne. In Syrian hamster embryo fibroblasts and HL-60 cells, oxeta es induced DNA single strand breaks. The alkyl- and hydroxyalkyl- bsti ted dioxetanes 1 and 2 were efficiently inactivated by cysteine, tat one, ascorbic acid, tocopherol, NADH and FADH2. While dioxetanes 1 d 2 e not **mutagenic** in Salmonella typhimurium strain TA100, enzof an dioxetanes 3 exhibited substantial effects. Further data ply t at presumably a **mutagenic** intermediate with a lifetime o a few inutes is produced from the benzofuran dioxetane.

L9 ANSWER 25 OF CA US COPYRIGHT 2001 ACS
ACCESSION NUMBER: 989:169398 CAPLUS
DOCUMENT NUMBER: 10:169398
TITLE: ltiplicity reactivation and **mutagenesis** of **rimethylpsoralen**-damaged herpes virus in ormal and Fanconi's anemia cells
AUTHOR(S): oppey, J.; Sala-Trepat, M.; Lopez, B.
CORPORATE SOURCE: nst. Curie, Paris, 75231, Fr.
SOURCE: utagenesis (**1989**), 4(1), 67-71
ODEN: MUTAEX; ISSN: 0267-8357
DOCUMENT TYPE: ournal
LANGUAGE: nglish

AB Fanconi's an- a (FA cells are hypersensitive to the lethal effect of DNA crosslinking ompds. Herpes simplex virus (HSV) has been used here as a probe to mon- or rep r of **psoralen** damage in FA cells, including psoralen c osslinks. The replication of HSV is impaired whe- its DN contains covalently photobound **psoralen** mols. In co parison to other **psoralens**, 4,5',8-**trimethylpsoralen** (T P) is 1 of the most photoreactive **psoralens** an- t for a relatively high proportion of DNA interstrand osslin s with UVA irradn. (365 nm). TMP-damaged HSV is efficiently eactiva ed by multiple infection in human fibroblasts. The extent of mu iplici y reactivation is greater in cells from FA donors (5 strains t-st-) than n normal cells (3 strains). **Mutagenesis** studied in t viral hymidine kinase focus revealed the following: (1) the spontane s vira mutation rate is lower in FA than in normal cells;

and (2) under conditions of multiple infection, the mutation rate is either greater (normal cells) or unchanged (FA cells) in the progeny from **psoralen**-damaged HSV compared to that from untreated virus. taken together, these observations suggest that the pathway underlying multiplicity reactivation of **psoralen**-damaged HSV is error-free in FA cells relative to normal cells.

L9 ANSWER 26 OF 35 CAPLUS COPYRIGHT 2001 ACS
ACCESSION NUMBER: 1988:50501 CAPLUS
DOCUMENT NUMBER: 108:50501
TITLE: Processing of **psoralen** adducts in an active human gene: repair and replication of DNA containing monoadducts and interstrand cross-links
AUTHOR(S): Vos, Jean Michel H.; Hanawalt, Philip C.
CORPORATE SOURCE: Dep. Biol. Sci., Stanford Univ., Stanford, CA, 94305, USA
SOURCE: Cell (Cambridge, Mass.) (**1987**), 50(5), 789-99
CODEN: CELLB5; ISSN: 0092-8674
DOCUMENT TYPE: Journal
LANGUAGE: English
AB DNA repair was examd. in the dihydrofolate reductase (DHFR) gene in cultured human cells treated with 4'-hydroxymethyl-4,5',8-**trimethyl**psoralen (HMT) using a newly developed assay for interstrand DNA cross-linking in defined genomic sequences. Within 24 h, 80% of the cross-links, but only 45% of the monoadducts, were removed from a 32 kb transcribed sequence, demonstrating that repair efficiency in an active human gene varies with the nature of the damage. HMT monoadducts were also detected in the replicated DHFR sequence at frequencies indicating little interference with replication. The existence of cross-linkable monoadduct sites in the replicated DNA implies strand continuity opposite those sites and a relatively error-free mechanism of bypass. This lesion replication could circumvent transcription blockage in a damaged gene. These findings have important implications for mechanisms of **mutagenesis** and DNA lesion tolerance in human cells.

L9 ANSWER 27 OF 35 MEDLINE
ACCESSION NUMBER: 87220049 MEDLINE
DOCUMENT NUMBER: 87220049 PubMed ID: 3473014
TITLE: 4,5',8-**Trimethylpsoralen.**
AUTHOR: Anonymous
SOURCE: IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO HUMANS, **(1986)** 40 357-71.
Journal code: GE4; 7902489. ISSN: 0250-9555.
PUB. COUNTRY: Switzerland
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198707
ENTRY DATE: Entered STN: 19900305
Last updated on STN: 19900305
Entered Medline: 19870716

L9 ANSWER 28 OF 35 MEDLINE
ACCESSION NUMBER: 87220045 MEDLINE
DOCUMENT NUMBER: 87220045 PubMed ID: 3473010
TITLE: Angelicin and some synthetic derivatives.
AUTHOR: Anonymous

SOURCE: IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO HUMANS, **(1986)** 40 291-315.
Journal code: GE4; 7902489. ISSN: 0250-9555.
PUB. COUNTRY: Switzerland
Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198707
ENTRY DATE: Entered STN: 19900305
Last updated on STN: 19900305
Entered Medline: 19870716

L9 ANSWER 29 OF 35 EMBASE COPYRIGHT 2001 ELSEVIER SCI. B.V.
ACCESSION NUMBER: 85173673 EMBASE
DOCUMENT NUMBER: 1985173673
TITLE: **Psoralens** as photoactive probes of nucleic acid structure and function: Organic chemistry, photochemistry, and biochemistry.
AUTHOR: Cimino G.D.; Gamper H.B.; Isaacs S.T.; Hearst J.E.
CORPORATE SOURCE: Department of Chemistry, University of California, Berkeley, CA 94720, United States
SOURCE: Annual Review of Biochemistry, (1985) VOL. 54/- (1151-1193).
CODEN: ARBOAW
COUNTRY: United States
DOCUMENT TYPE: Journal
FILE SEGMENT: 037 Drug Literature Index
029 Clinical Biochemistry
LANGUAGE: English

AB **Psoralens** comprise the most important class of photochemical reagents for the investigation of nucleic acid structure and function. They have been used for determining the structure of both DNA and RNA in viral, bacterial, and mammalian systems, and also for studying functional questions such as the role of the small nuclear RNAs in processing heteronuclear RNA. A list of some of the major applications of these compounds during the last ten years is presented in Table 1. **Psoralens** are unique in their ability to freeze helical regions of nucleic acids. Psoralens react with DNA and RNA by a two-step mechanism. First, the planar **psoralen** molecule intercalates within a double helical region of nucleic acid. Covalent addition of the **psoralen** is effected by controlled irradiation into an absorption band of the psoralen molecule. Stable, but photoreversible, covalent adducts form with pyrimidine bases at one or both ends of the **psoralen** molecule. By forming covalent crosslinks with base-paired structures, psoralens can probe both static and dynamic structural features. **Psoralens** can trap long-range interactions which are in dynamic equilibrium. This allows both the occurrence of the interaction to be established and its position within the structure to be mapped. Psoralens can also be used temporally, such as in following the fate of short-lived nucleic acid species in vivo. The details of the interaction between **psoralens** and nucleic acid are well understood at the molecular level. The structure of the **psoralen** adducts formed with DNA have been determined, the polarity of the reaction which converts monoadduct to crosslink established, and methods for the exclusive formation of monoaddition products worked out. This advancd state of chemical control makes the **psoralens** extremely versatile reagents. As more information is compiled on structure-activity parameters, a fine tuning of the reaction of psoralens with nucleic acid will be realized. Future applications of **psoralens** for investigating nucleic acid

structure ... will be aided by the following developments. The
preparati ... zation probes which carry **psoralen**
monoadduc ... ly under way. These probes will be used to form
covalent ... for ocating particular sequences and also for
site-spec ... placem ...t of **psoralen** monoadducts in nucleic acid
structure ... photo emical transfer of the **psoralen**. The
transferr ... add ... will be used for fixation of 'dynamic' base paired
intrastru ... conf ...mations by crosslink formation. Chemical schemes
for
the site ... cl vage of DNA and RNA at the position of
psoralen ... ar also being developed. These procedures will
allow for ... ect ...apping of secondary structure at the position of
crosslink ...ation. ...inally, many new **psoralen** derivatives are
being syn ... d f specific applications such as site-directed
crosslink ... DNA d protein-nucleic acid crosslinking.
Psoralen ... wh ... will crosslink purine to pyrimidine and
purine to ... are ...lso being considered. It is not the intent of this
review to ... th properties and applications of every
psoralen ... ive ... own. Rather we try to show how a basic
understan ... the rganic chemistry, photochemistry, and biochemistry
of these ... s h produced a versatile molecular tool for the
elucidati ... nucle ... acid structure and function. The use of
psoralens ... he de rmination of nucleic acid secondary
structure ... em ...asized here. Recent reviews include coverage of
other asp ... ps ...**lens** including clinical applications (1,
2), **mutag** ... to city and repair (3), and photochemistry
and photo ... (4-) .

L9 ANSWER 3 ... DLINE
ACCESSION NUMB ... 3141 0 MEDLINE
DOCUMENT NUMBE ... 3141 0 PubMed ID: 6338360
TITLE: ...ompa tive bacterial **mutagenicity** studies with
...me' xypsoralen and 4,5',8-**trimethylpsoralen** in
...he ... sence of near-ultraviolet light and in the dark.
AUTHOR: ...irkla ...d D J; Creed K L; Mannisto P
SOURCE: ...UTAT ...N RESEARCH, **(1983 Feb)** 116 (2) 73-82.
...burn ... code: NNA; 0400763. ISSN: 0027-5107.
PUB. COUNTRY: ...the ands
...burn ... ; Article; (JOURNAL ARTICLE)
LANGUAGE: ...ngli ...
FILE SEGMENT: ...cio ...y Journals
ENTRY MONTH: ...83 ...
ENTRY DATE: ...nte ... STN: 19900318
...ast ... dated on STN: 19900318
...nter ... Medline: 19830415

AB 2 strains ... typh urium, TA98 and TA100, and 2 strains of E. coli,
WP2(pKM1(... WP2u A-(pKM101) were used to study **mutagenesis**
by 8-met ... alen ...8-MOP) and 4,5',8-**trimethylpsoralen**
(4,5',8-... the rk and in the presence of near-ultraviolet (NUV)
light bo ... it ... abolic activation and with rat-liver S9 at 3 levels
(4, 10 a ... s dard cofactors). The S9-independent base
substitu ... ager ... activity of 8-MOP plus NUV light was
confirme ... (pKM ...1), and a similar activity was seen for 4,5',8-TMP,
although ... sub ance was active in TA100. The frameshift
mutagenic ... ty o 8-MOP in the dark in TA98 was not confirmed
despite ... le ls which would ensure DNA replication, but this may
be due t ... ver ncentrations of 8-MOP achieved in the common
solvent
system a ... Both -MOP and 4,5',8-TMP were **mutagenic** in
WP2uvrA- af microsomal activation, and the responses were

similar ... experiments were conducted in the dark or in NUV light. In view of ... administration of 8-MOP to psoriasis patients, this finding ... of relevance in risk assessment, and tends to suggest that topical ... ion of 4,5',8-TMP to psoriatic patients may present reduced ... malignant disease.

L9 ANSWER 3 ... EMBASE COPYRIGHT 2001 ELSEVIER SCI. B.V.
ACCESSION NUM... 20944 9 EMBASE
DOCUMENT NUMB... 98207609
TITLE: Localized **mutagenesis** of the tetracycline chromosome region in pBR322 by 4,5',8-trimethylpsoralen.
AUTHOR: Foon K...
CORPORATE SOU... Cent. ral Hlth Res., Dept. Anat. Histol., Sch. Dent. Med., Univ. ennsylvania, Philadelphia, PA 19104, United States
SOURCE: ...utat... n Research, (1982) 93/2 (253-262).
CODEN: MUREAV
COUNTRY: Neth... ands
DOCUMENT TYPE: Jour...
FILE SEGMENT: 037 Drug Literature Index
022 Human Genetics
029 Clinical Biochemistry
LANGUAGE: Englis...
AB In vitro ... nesis of functional DNA gene fragments by covalent ...tive ...ents permits one in principle to examine the consequ... ...ratio... in DNA sequence directly. I have carried out selectiv... ...genesi... of the tetracyclin resistance gene in the plasmid ... using the long wavelength UV light activated reaction of 4,5',8-tr... ...ylpsora... en (TMP). The **mutagenized** DNA sequence ... ...e EcoI -Hind III restriction fragment in the vicinity of the Tc.RTM. ... r. Two classes of mutants were obtained. One exhibited a high lev... ...e resi...tance (40-60 .mu.g/ml) but still than the wild-type. Interest... these ...howed no sequence alterations at all in the vicinity of the T... ...ted g...ftment. The other class of mutants exhibited low levels ... resis...nce (<20 .mu.g/ml) and two of those that were sequenc... found ...o contain a 15-base pair insertion to the right of the orig... ...nd III site. Under the conditions used, **psoralen** plus UV ...reatme...t appears to be capable of inducing substantial frame-s... DNA.

L9 ANSWER 3 ... EMB... E COPYRIGHT 2001 ELSEVIER SCI. B.V.
ACCESSION NUM... 8119... 7 EMBASE
DOCUMENT NUM... 19811...07
TITLE: Seedl...g injury & mitotic aberrations induced by **psoral**...ns in barley Hordeum vulgare.
AUTHOR: Kak S...; Kaul B.L.
CORPORATE SOU... Reg. R... s. Lab., Jammu 180 001, India
SOURCE: India... Journal of Experimental Biology, (1981) 19/7 (643-...4).
CODEN: IJEBA6
COUNTRY: Indi...
DOCUMENT TYP... Jour...
FILE SEGMENT: 037 Drug Literature Index
LANGUAGE: Engli...

L9 ANSWER 3 5 EME E COPYRIGHT 2001 ELSEVIER SCI. B.V.
ACCESSION NUM 81141 9 EMBASE
DOCUMENT NUMB 19811 589
TITLE: Photo actions between furocoumarins and DNA: The molecular basis f the photochemotherapy of psoriasis.
AUTHOR: Anton lo C.; Baccichetti F.; Bordin F.; et al.
CORPORATE SOU Inst. him. Farmaceut., Univ. Padova, Italy
SOURCE: Medec e Biologie Environnement, (1980) 8/1 (155-168).
CODE 4BENDX
COUNTRY: Belgi
DOCUMENT TYP Journ
FILE SEGMENT: 037 Drug Literature Index
LANGUAGE: Englis

L9 ANSWER 3 5 EM E COPYRIGHT 2001 ELSEVIER SCI. B.V.
ACCESSION NUM 8002 1 EMBASE
DOCUMENT NUMB 1980 011
TITLE: **Psora nes** in photobiology, applied to cosme logy.
AUTHOR: Forlo P.
CORPORATE SOU Belgi
SOURCE: Farma utisch Tijdschrift voor Belgie, (1979) 56/3 (189- 8).
CODE FMTBB2
COUNTRY: Belgi
DOCUMENT TYPE: Jour
FILE SEGMENT: 037 Drug Literature Index
LANGUAGE: Dutch

L9 ANSWER 3 5 EME E COPYRIGHT 2001 ELSEVIER SCI. B.V.
ACCESSION NUM 78394 0 EMBASE
DOCUMENT NUMB 1978 480
TITLE: Fram ift mutations in bacteria produced in the dark by seve furocoumarins; Absence of activity of 4,5',8-trime **ylpsoralen**.
AUTHOR: Ashwo -Smith M.J.
CORPORATE SOU Lab. ol. Physico-Chim., Ec. Nat. Superieure Biol. Appl. Nutri Alimentat., Univ. Dijon, France
SOURCE: Mutat n Research, (1978) 58/1 (23-27).
CODEN: MUREAV
COUNTRY: Neth ands
DOCUMENT TYPE: Jour
FILE SEGMENT: 037 Drug Literature Index
022 Human Genetics
004 Microbiology
LANGUAGE: Engli
AB Four fur rins, mely **psoralen** (P), 8-methoxypsoralen (8-MOP), 8-trim **hylpsoralen** (TMP) and angelicin (A) were tested fo k muta **nesis** in E. coli lac-. Three compounds: P, 8-MOP an re si to be weak frameshift **mutagens**. TMP, surprisi n vie f its very active photosensitizing action, was found to be no genic. hese results are discussed in relation to the phot tizing ction of the furocoumarins.

=> d history

(FILE 'H NTER 13:59:16 ON 14 AUG 2001)

```
     FILE 'MEI  ,    EMBAS   CAPLUS, SCISEARCH, BIOSIS, REGISTRY' ENTERED AT
     13:59:35        AUG ' 01
L1         159:      SORALI '?
L2          11:      1 AND   'TAGEN?
L3           9:      2 AND   :<1998
L4           4       .3 AND '.RTEBRATE
L5           '        REM L  (0 DUPLICATES REMOVED)
L6           2       .2 AND . 'IMAL
L7           2:      .6 AND   '<1998
L8           4       .7 AND   .IMETHYL?
L9           3        REM I  (10 DUPLICATES REMOVED)

=> s l9 and fi
L10          (       .ND FIS .

=> s l9 and ?'
   5 FILES SE.       ...
LEFT TRUNCATI(       ORED F  . '?FISH' FOR FILE 'REGISTRY'
L11          (       ND ?F
Left truncati(       not v.  id in the specified search field in the
specified fil(       e ter:  as been searched without left truncation.
Examples: '?T:       ' woul  be searched as 'TERPEN?' and '?FLAVONOID'
would be sear(       .s 'FL  NOID.'

If you are se        .g in a field that uses implied proximity, and you
used a trunca        ymbol   fter a punctuation mark, the system may
interpret tho        tion    mbol as being at the beginning of a term.
Implied proxi        s use   n search fields indexed as single words,
for example, '       sic I:  x.

=> s l9 and f
L12          (       .ND FI: .

=> s l3 and f
L13                  .ND FIS ?

=> dup rem l1
DUPLICATE IS .!      .'LAB   IN 'REGISTRY'.
ANSWERS FROM '.      'FILES  LL BE CONSIDERED UNIQUE
PROCESSING CO:       D FOR   3
L14                   REM I   (0 DUPLICATES REMOVED)

=> d l14 ibib        -
YOU HAVE REQU        'ITA I  M 2 ANSWERS - CONTINUE? Y/(N):y

L14  ANSWER 1        :IOS    COPYRIGHT 2001 BIOSIS
ACCESSION NUM        '97.    7235  BIOSIS
DOCUMENT NUMB'       PREV    799816438
TITLE:               .cut    yeloid leukemia following psoralen with
                     .ltra   olet a therapy: A fluorescence in situ
hybridization
                     study
AUTHOR(S):           Yon-    Y. L. (1); Au, W. Y.; Ng, M. H. L.; Chan, L. C.;
Au,
                     ' . S.
CORPORATE SOU        .)      iv. Dep. Med., Professorial Block, Queen Mary Hosp.,
                     .ad     m Rd., Hong Kong Hong Kong
SOURCE:              Can'    Genetics and Cytogenetics, (1997) Vol. 99, No. 1,
                     p. -    -13.
```

```
                          SN: 0165-4608.
DOCUMENT TYPE:          rti
LANGUAGE:               ngl    1
AB    A woman        osis fungoides treated by psoralen with
      ultravio       PUVA) and electron beam therapy developed acute myeloid
      leukemia       three years later. Karyotypic analysis of the leukemia
      cells re       monos  y 7. Fluorescence in situ hybridization showed that
      the mono       ion    ad accounted for about a third of the marrow cells
      after PU        ent   but replaced the entire marrow at leukemic
      transfor              findings were consistent with a secondary AML
      evolving              lying myelodysplasia, supporting that PUVA therapy
      might ha       u agen  effect on hematopoietic cells. This might
      be relat       s ef  ect on circulating hematopoietic stem cells.

L14  ANSWER 2        MBA.   COPYRIGHT 2001 ELSEVIER SCI. B.V.
ACCESSION NUM        03.  .3  EMBASE
DOCUMENT NUMB        7C    413
TITLE:                    xins: occurrence, chemistry, biological activity.
AUTHOR:                     A.
CORPORATE SOU        D     Reg. Res. Lab., Peoria, Ill. 61604, United States
SOURCE:              oy    , (1975) 38/1 (21-35).
                     ODEN  LLOYA2
DOCUMENT TYPE:       Journ  l
FILE SEGMENT:         7      Drug Literature Index
                      4      Microbiology
LANGUAGE:


=> d history

     (FILE 'H              NE   T 13:59:16 ON 14 AUG 2001)

     FILE 'ME.            A    , CAPLUS, SCISEARCH, BIOSIS, REGISTRY' ENTERED AT
     13:59:35                   1
L1          15
L2          11                 TAGEN?
L3           9                 <1998
L4                             RTEBRATE
L5                        M    (0 DUPLICATES REMOVED)
L6           2            ND   IMAL
L7           2            AND  Y<1998
L8                             IMETHYL?
L9                             (10 DUPLICATES REMOVED)
L10                            SH
L11                            SH
L12                            SH?
L13                            SH?
L14                              (0 DUPLICATES REMOVED)

=> s l6 and
L15

=> s l7 and f
L16

=> d l15 ibib

L15  ANSWER 1           S.   COPYRIGHT 2001 BIOSIS
ACCESSION NUM          7:  7235   BIOSIS
DOCUMENT NUMB              799816438
```

TITLE: myeloid leukemia following **psoralen** with
olet a therapy: A fluorescence in situ
hybridization

AUTHOR(S): Y. L. (1); Au, W. Y.; Ng, M. H. L.; Chan, L. C.;
Au,

CORPORATE SOU v. Dep. Med., Professorial Block, Queen Mary Hosp.,
m Rd., Hong Kong Hong Kong
SOURCE: Genetics and Cytogenetics, (1997) Vol. 99, No. 1,
13.
165-4608.

DOCUMENT TYPE:
LANGUAGE:
AB A woman ungoides treated by **psoralen** with
ultraviol nd electron beam therapy developed acute myeloid
leukemia ears later. Karyotypic analysis of the leukemia
cells rev y 7. Fluorescence in situ hybridization showed that
the monos ad accounted for about a third of the marrow cells
after PU but replaced the entire marrow at leukemic
transform findings were consistent with a secondary AML
evolving lying myelodysplasia, supporting that PUVA therapy
might hav effect on hematopoietic cells. This might
be relate ct on circulating hematopoietic stem cells.

=> d l16 ibib

L16 ANSWER 1 COPYRIGHT 2001 BIOSIS
ACCESSION NUME 7235 BIOSIS
DOCUMENT NUMBE 799816438
TITLE: yeloid leukemia following **psoralen** with
olet a therapy: A fluorescence in situ
hybridization

AUTHOR(S): Y. L. (1); Au, W. Y.; Ng, M. H. L.; Chan, L. C.;
Au,

CORPORATE SOU v. Dep. Med., Professorial Block, Queen Mary Hosp.,
m Rd., Hong Kong Hong Kong
SOURCE: Genetics and Cytogenetics, (1997) Vol. 99, No. 1,
13.
165-4608.

DOCUMENT TYPE:
LANGUAGE:
AB A woman ungoides treated by **psoralen** with
ultraviol nd electron beam therapy developed acute myeloid
leukemia ears later. Karyotypic analysis of the leukemia
cells rev y 7. Fluorescence in situ hybridization showed that
the monos ad accounted for about a third of the marrow cells
after PUV out replaced the entire marrow at leukemic
transform findings were consistent with a secondary AML
evolving lying myelodysplasia, supporting that PUVA therapy
might hav effect on hematopoietic cells. This might
be relate ct on circulating hematopoietic stem cells.

=> d history

(FILE 'H 13:59:16 ON 14 AUG 2001)

```
     FILE 'MED                CAPLUS, SCISEARCH, BIOSIS, REGISTRY' ENTERED AT
     13:59:35                 1
L1         1596
L2          113               TAGEN?
L3           96               <1998
L4            4               RTEBRATE
L5            4               (0 DUPLICATES REMOVED)
L6          272               IMAL
L7          21                <1998
L8            4               IMETHYL?
L9            3               (10 DUPLICATES REMOVED)
L10                           SH
L11                           ISH
L12                           SH?
L13                           SH?
L14                            (0 DUPLICATES REMOVED)
L15                           SH?
L16                           SH?

=> s l3 and py
L17          46               IDINE?

=> s l7 and py
L18           8               IDINE?

=> dup rem l18
DUPLICATE IS N                IN 'REGISTRY'.
ANSWERS FROM T                LL BE CONSIDERED UNIQUE
PROCESSING COM                3
L19                            (2 DUPLICATES REMOVED)

=> d l19 ibib
YOU HAVE REQU                 1 6 ANSWERS - CONTINUE? Y/(N):y

L19  ANSWER 1 O               INE
ACCESSION NUME                /     MEDLINE
DOCUMENT NUMB                 /   PubMed ID: 8760575
TITLE:                        on of cyclobutane thymine dimers from UVA
                              nsitization of pyridopsoralen monoadducted DNA.
AUTHOR:                       L A; Beylot B; Vigny P; Spassky A
CORPORATE SOUR                ento de Bioquimica, Universidade de Sao Paulo,

SOURCE:                       EMISTRY AND PHOTOBIOLOGY, (1996 Aug) 64
                              -55.
                              code: P69; 0376425. ISSN: 0031-8655.
PUB. COUNTRY:                 States
                              ; Article; (JOURNAL ARTICLE)
LANGUAGE:
FILE SEGMENT:                 Journals
ENTRY MONTH:
ENTRY DATE:                   STN: 19961015
                              dated on STN: 19961015
                              Medline: 19961001
AB   The prese                vides evidence that thymine dimerization can be UVA
     photosen                 tranucleotide, 5'-TATT-3', by a
     7-methyl-                psoralen monoadduct in DNA. The efficiency
     of the ph                pends on the tetranucleotide flanking sequences.
     These res                ate that one DNA lesion can originate the
contiguous
```

formation of ... type of lesion and emphasize the sequence-specific
response to i... ...n of drugs with DNA. Results are related to the
sensitivity o... ...1,10-phenanthroline-cuprous ion complex nucleolytic
activity and ... in terms of the major role of local deformability
of DNA in int... ...with ligands.

L19 ANSWER 2 OF 6 ...INE
ACCESSION NUMBER: ...2 MEDLINE
DOCUMENT NUMBER: ...2 PubMed ID: 2342507
TITLE: ...Induction of **pyrimidine** cyclobutane dimers ...: for the high cytotoxic effect of ...lpyrido[3,4-c]**psoralen** plus UV-A?.
AUTHOR: ...ni S
CORPORATE SOURCE: ...t Curie, Section de Biologie, UA 1292 CNRS, Paris,
SOURCE: ...N RESEARCH, **(1990 May)** 235 (3) 203-7. ...code: NNA; 0400763. ISSN: 0027-5107.
PUB. COUNTRY: ...nds
LANGUAGE: ...; Article; (JOURNAL ARTICLE)
FILE SEGMENT: ...y Journals
ENTRY MONTH:
ENTRY DATE: ...STN: 19900720 ...dated on STN: 19900720 ...Medline: 19900627

AB Recently, it w... ...that the photoactivation of 7-methylpyrido[3,4-c] **psoralen** (MPP), ...ly phototoxic monofunctional compound, as well as leadin... ...direct cycloaddition of the molecule to **pyrimidine** bas... ...induces the dimerization of adjacent **pyrimidines** in... ...vitro (Moysan et al., 1988). For other **psoralens**, e.g. ...oxypsoralen (8-MOP), such a formation of **pyrimidine** dim... ...not occur (Costalat et al., 1989). The relatively low ... ...of **pyrimidine** dimers which one can estimate from ... ...vitro results to be formed in vivo in cell DNA after highly lethal ... ...sensitization does not indicate that these dimers have important ... ...biological consequences. They could, however, interact with ...cts and eventually greatly potentiate their action. In order to te... ...ypothesis, experiments were designed to mimic the photosensitiza... ...PP. CV-1 TC-7 cells were irradiated at 254 nm, to produce **pyrimi**... ...ers, and subsequently treated with 8-MOP or angelicin p... ...m light, to produce **psoralen** adducts. The clonogenicity ... cells was compared to that of cells damaged only by irradiation at ...r by **psoralens** plus 365-nm light. It was observed that, ... same amount of induced adducts, the lethal effect of photosensit... ...y MPP remains much higher than that of photosensitiza... ...-MOP coupled to a large excess of **pyrimidine** dim... ...ed with 254-nm light. In fact, with both 8-MOP and ange... ...ose to additive effects were observed between **pyrimidine** dim... ...**soralen** adducts.(ABSTRACT TRUNCATED AT 2...

L19 ANSWER 3 OF 6 ...NE DUPLICATE 1
ACCESSION NUMBER: ...5 MEDLINE
DOCUMENT NUMBER: ...5 PubMed ID: 2125562
TITLE: ...logical studies with dioxetanes in isolated DNA, ..., and mammalian cells.
AUTHOR: ...Beinhauer A; Mosandl T; Saha-Moller C; Vargas F; ...Fuller E; Schiffmann D; Wild D

CORPORATE SOURCE: e of Organic Chemistry, University of Wurzburg, Republic of Germany.
SOURCE: ENTAL HEALTH PERSPECTIVES, **(1990 Aug)** 88 Ref: 32
code: EI0; 0330411. ISSN: 0091-6765.
PUB. COUNTRY: States
; Article; (JOURNAL ARTICLE)
Review; (REVIEW)
TUTORIAL)
LANGUAGE:
FILE SEGMENT: Journals
ENTRY MONTH:
ENTRY DATE: STN: 19910329
dated on STN: 19910329
Medline: 19910228

AB 1,2-Dioxetanes, ent chemical sources of triplet excited carbonyl compounds, wer d to be genotoxic in isolated DNA, bacteria, and cultured mamma s. In superhelical DNA of bacteriophage PM2, various alkyl- oxyalkyl-substituted dioxetanes (1) induced predominantly ase-sensitive base modifications and only few single strand ith a specific endonuclease a small fraction of the base modificati identified as **pyrimidine** dimers. The **psoralen** dioxet , or PsD bound photochemically to calf thymus DNA at -pyrone ring of **psoralen** (fluorescence measurements). ding was also observed when calf thymus DNA was incubated with and 3-hydroxymethyl-3,4,4-trimethyl-1,2-dioxetane. In mster embryo fibroblasts and HL-60 cells, dioxetanes ind single strand breaks. The alkyl- and hydroxyalkyl-s d dioxetanes 1 and 2 were efficiently inactivated by cysteine, g ne, ascorbic acid, tocopherol, NADH and FADH2. While dioxetanes 1 a e not **mutagenic** in Salmonella typhimurium strain TA100, n dioxetanes 3 exhibited substantial effects. Further data i presumably a **mutagenic** intermediate with a lifetime of utes is produced from the benzofuran dioxetane.

L19 ANSWER 4 OF 6 NE DUPLICATE 2
ACCESSION NUMBER: MEDLINE
DOCUMENT NUMBER: PubMed ID: 3115998
TITLE: ir in specific sequences in mammalian cells.
AUTHOR: A
CORPORATE SOURCE: nt of Biological Sciences, Stanford University, CA 20.
SOURCE: OF CELL SCIENCE. SUPPLEMENT, **(1987)** 6

code: HNG; 8502898. ISSN: 0269-3518.
PUB. COUNTRY: United Kingdom
; Article; (JOURNAL ARTICLE)
LANGUAGE:
FILE SEGMENT: Journals
ENTRY MONTH:
ENTRY DATE: STN: 19900305
ated on STN: 19900305
Medline: 19871120

AB To investigate uence of function or activity of a DNA sequence on its repair, we died excision repair of a number of adducts in the non-transcribe chromatic alpha DNA of monkey cells (by physically isolating the D also the removal of **pyrimidine** dimers in a number of ge dent and human cells (by an indirect assay using a

dimer-specific ease). In confluent cells, **psoralen** and
aflatoxin B1 (A ducts are produced in similar frequencies in alpha
and in the resi DNA, but removal from alpha is severely deficient.
Adducts of N-ac tylaminofluorene (NA-AAF) are formed in slightly
higher frequenc lpha, and removal is slightly deficient. The
removal of thy ols from alpha DNA in gamma-irradiated cells is
proficient, as r synthesis elicited by exposure to methyl methane
sulphonate, di lphate, or 254 nm ultraviolet light (u.v.).

Removal
of AFB1 and NA- cts from alpha is enhanced by small doses of u.v.
but not by X-ra S. The quantum efficiency of conversion of
psoralen monoac crosslinks is much lower in alpha DNA.
Taken together, esults suggest that the highly condensed chromatin
structure of a ers access of the repair system that acts on bulky
adducts but not ems for repair of specific base damage, u.v.

damage
may alter this n structure directly or facilitate the action of
some system tha s accessibility of chromatin to repair. The repair
deficiencies ar served in actively growing cells, in which
chromatin struc be less condensed due to DNA replication. We have
also demonstrat rential excision repair of **pyrimidine**
dimers in activ Dimers are efficiently removed from the essential
dihydrofolate r (DHFR) and hydroxymethylglutaryl CoA reductase
genes in Chines r ovary (CHO) cells and from the transcribed c-abl
proto-oncogene ouse cells. Both cell types remove few dimers from
their overall r from sequences distal to the DHFR gene; dimers
are also remove from the non-transcribed mouse c-mos gene. In
human cells, di removed more rapidly from the DHFR gene than from
the genome as a However, repair is as deficient in this gene in
XP-C cells as the entire genome. These results suggest that
resistance to e correlates better with repair of vital or active
sequences than rall repair levels and that **mutagenic**
efficiency may ording to the activity of the gene under study.

L19 ANSWER 5 OF 6 COPYRIGHT 2001 ELSEVIER SCI. B.V.
ACCESSION NUMBER: EMBASE
DOCUMENT NUMBER: 73
TITLE: s as photoactive probes of nucleic acid
e and function: Organic chemistry, photochemistry,
nemistry.
AUTHOR: .D.; Gamper H.B.; Isaacs S.T.; Hearst J.E.
CORPORATE SOURCE: nt of Chemistry, University of California,
, CA 94720, United States
SOURCE: eview of Biochemistry, (1985) VOL. 54/-
93).
RBOAW
COUNTRY: tates
DOCUMENT TYPE:
FILE SEGMENT: Drug Literature Index
Clinical Biochemistry
LANGUAGE:
AB **Psoralens** comp most important class of photochemical
reagents for t igation of nucleic acid structure and function.
They have been determining the structure of both DNA and RNA in
viral, bacteri mmalian systems, and also for studying functional
questions, suc role of the small nuclear RNAs in processing
heteron clear st of some of the major applications of these
compounds duri st ten years is presented in Table 1.
Psoralens are their ability to freeze helical regions of
nucleic acid. react with DNA and RNA by a two-step

mechanism. Fir lanar **psoralen** molecule intercalates
within a doubl region of nucleic acid. Covalent addition of the
psoralen is ef controlled irradiation into an absorption
band of the ps lecule. Stable, but photoreversible,
covalent adduc th **pyrimidine** bases at one or both ends
of the psorale e. By forming covalent crosslinks with
base-paired st **psoralens** can probe both static and
dynamic structu ures. **Psoralens** can trap long-range
interactions w in dynamic equilibrium. This allows both the
occurrence of action to be established and its position within
the structure ped. **Psoralens** can also be used
temporally, su following the fate of short-lived nucleic acid
species in viv tails of the interaction between **psoralens**
and nucleic ac ll understood at the molecular level. The
structure
of the psorale formed with DNA have been determined,
the polarity o ction which converts monoadduct to crosslink
established, a s for the exclusive formation of monoaddition
products worke is advancd state of chemical control makes the
psoralens extr satile reagents. As more information is
compiled about e-activity parameters, a fine tuning of the
reaction of ps ith nucleic acid will be realized. Future
applica n of s for investigating nucleic acid
structu and will be aided by the following developments. The
prepara on of ation probes which carry **psoralen**
monoadd ts is y under way. These probes will be used to form
covalen hybri cating particular sequences and also for
site-specifi of **psoralen** monoadducts in nucleic acid
structures via mical transfer of the **psoralen**. The
transf red no will be used for fixation of 'dynamic' base paired
intras ura ations by crosslink formation. Chemical schemes
for
the sit age of DNA and RNA at the position of
psorale dit lso being developed. These procedures will
allow f pping of secondary structure at the position of
crossli m nally, many new **psoralen** derivatives are
being synth i pecific applications such as site-directed
crosslinking protein-nucleic acid crosslinking.
Psoral n will crosslink purine to **pyrimidine**
and pu also being considered. It is not the intent of
this re the properties and applications of every
psorale wn. Rather we try to show how a basic
unders ganic chemistry, photochemistry, and biochemistry
of thes produced a versatile molecular tool for the
elucida cid structure and function. The use of
psoralns ination of nucleic acid secondary
struct re sized here. Recent reviews include coverage of
other ens including clinical applications (1,
2), **mu** ty and repair (3), and photochemistry
and pho

L19 ANSWER E
ACCESSION N MEDLINE
DOCUMENT NU PubMed ID: 6472320
TITLE: 8-methoxypsoralen monoadducts in mouse lymphoma

AUTHOR: W; Heddle J A; Arlett C F
SOURCE: RESEARCH, **(1984 Jul-Aug)** 132 (1-2) 73-8.
code: NNA; 0400763. ISSN: 0027-5107.
PUB. COUNTRY: nds

Article; (JOURNAL ARTICLE)
LANGUAGE:
FILE SEGMENT: Journals
ENTRY MONTH:
ENTRY DATE: STN: 19900320
ited on STN: 19900320
Medline: 19841025

AB Studies o f DNA lesions at biologically important doses is extremely most **mutagens**. With 8-methoxypsoralen (8-MOP) ltraviolet light (UVA) as the lesion-inducing agent, h asy to manipulate the relative frequency of differen y means of a special experimental protocol (the tap-and-t and this can be used to measure repair of DNA adducts. of photoadducts are produced by 8-MOP plus UVA treatment: ane monoadducts, 4',5'-cyclobutane monoadducts, and 8-MOP-DNA rosslinks. A monoadduct is formed when a photoacti lecule reacts with a **pyrimidine** base. An 8-MOP-DNA rosslink is formed when an existing monoadduct is photoacti with another **pyrimidine** base on the opposite us monoadducts are formed by absorption of one photon of sslinks by absorption of two. In the tap-and-test experimen exposed to UVA in the presence of 8-MOP and then re-exposed e absence of free 8-MOP so that only crosslinks can be produc nd UVA treatment. By means of this technique we have prev hat DNA crosslinks are much more effective than monoadduc j chromosomal damage (sister-chromatid exchanges and micr t mutations (Liu-Lee et al., 1984). If L5178Y mouse lymphoma e to remove monoadducts, incubation prior to the second UV ould lead to decreases in the effect of re-irradia fewer monoadducts would be available for crosslink formation. we have found that **psoralen** monoadducts are repai ells and that about 70% of those capable of crosslink removed or otherwise made unavailable for crosslink 6 h.

=> d history

(FILE 'HO 13:59:16 ON 14 AUG 2001)

FILE 'MED CAPLUS, SCISEARCH, BIOSIS, REGISTRY' ENTERED AT 13:59:35

L1 159
L2 113 AGEN?
L3 96 1998
L4 4 EBRATE
L5 4) DUPLICATES REMOVED)
L6 27 MAL
L7 21 1998
L8 4 IETHYL?
L9 3 0 DUPLICATES REMOVED)
L10 H
L11 SH
L12 ?
L13 ?
L14 ? (0 DUPLICATES REMOVED)

L15 [illegible] ...i?
L16 [illegible] ...i?
L17 [illegible] ...IMIDINE?
L18 [illegible] ...IMIDINE?
L19 [illegible] (2 DUPLICATES REMOVED)

=>

---Logging off

=>
Executing the l ...

=> LOG Y

COST IN U.S. DC	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED	223.16	223.31

DISCOUNT AMOUNT ...YING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER F	-5.88	-5.88

STN INTERNATION ... 14:17:29 ON 14 AUG 2001